METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

REPORTS ON

SERVICE PLANNING

COMMUTER RAIL PROJECT

VOLUME I

DE LEUW, CATHER & COMPANY OF CANADA LIMITED

METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

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SERVICE PLANNING

COMMUTER RAIL PROJECT

VOLUME I

PREAMBLE

The seven reports contained in this first of two volumes were prepared as part of Task I-1 and II-1 as identified in the Appraisal Report on Scope and Procedures, November 8, 1965.

The purpose of this Task has been to provide information to assist in the detailed design of the Lakeshore Commuter Service.

The reports are presented in the following order:-

Review of Station Locations

The Physical Restraints and Their Effects on Research

Train Schedule and Frequency of Operation

Connecting Feeder Bus and Transit Service

Effect of Parking Fees on Commuter Patronage

Fare Structure

Introduction of Service and Service Programme for Trial

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January 24th, 1966

Mr. P.E. Wade, Study Director,
Metropolitan Toronto & Region
Transportation Study,
P. O. Box 227,
Parliament Buildings
TORONTO 2, Ontario.

Research in Planning the Commuter Rail Project Stations and Service Limits

Dear Mr. Wade:

The attached interim report contains a detailed analysis of each station proposed or considered as a stop in the proposed lakeshore commuter service.

This analysis is a review of previous conclusions listed in the January, 1965 Commuter Rail Project, and it also makes detailed reference to the data recently published from the 1964 MTARTS/MTPB Home Interview Survey.

Yours very truly,

DE LEUW, CATHER & COMPANY OF CANADA LIMITED

D. McCorquodale, P. Eng.,
Project Manager.

DMcC/feh
encl.

METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

RESEARCH IN PLANNING THE COMMUTER RAIL PROJECT

REVIEW OF STATION LOCATIONS

The geographic location, accessibility and other pertinent factors of all station locations have been reviewed to affirm or modify the locations as described in the January, 1965 Report "Commuter Rail Project".

The main purpose of the review was to take advantage of more recent or detailed information not available when the 1965 Report was being prepared, such as the results of the 1964 Home Interview Survey conducted by Metropolitan Toronto and Region Transportation Study and Metropolitan Toronto Planning Board. This survey provides more accurate trip information along the commuter rail corridor than that previously available.

The principles outlined in the previous report which influenced decisions on station location were adhered to in the review. These are as follows:

Patronage potential

Minimum station spacing - 2 miles

Adjacent arterial street or concession road

Vacant areas for parking

Accessibility for feeder bus

Physical limitations (of the site)

Also considered was the effect of station stops on train operating time, which has a direct bearing on the attractiveness of the service as a whole.

Our review has confirmed that the station stops proposed in the 1965 report are located to provide maximum accessibility to the public and that they will provide an opportunity to collect data on commuter rail usage under a wide variety of conditions typical of the Region.

The new data available has shown that an opportunity will be provided during the trial to test the use of commuter rail service to work destinations at points outside the central business district. These include areas adjacent to Long Branch, Mimico, Danforth and Eglinton. Sunnyside also has a potential as a work destination station, however it is our opinion that a stop at this point would have a detrimental effect on train service to all points west. It is not recommended that a stop be considered at Sunnyside unless evidence is produced during the trial from the other stations named above to conform that there is a demand for service to work destinations outside the central business district. At this time it would also be necessary to evaluate the equipment capacity required to handle traffic to and from Sunnyside.

The review of station locations included a reappraisal of the station catchment areas and the number of trips made from them to destinations in downtown Toronto accessible to Union Station or the Yonge-University subway.

A comparison was made of the data obtained from the telephone interview survey, on which patronage potential in the 1965 report is based, and the data obtained from the 1964 MTPB/MTARTS Home Interview Survey.

The total number of trips from the rail corridor east and west of Union Station into downtown Toronto compared favourably.

As might be expected some variation was found in the number of trips from individual station catchment areas into downtown Toronto. The only variations which might have an effect on station design occurred in the Dunbarton, Guildwood and Eglinton catchments, and we do not believe that this information in itself is sufficient to adjust the approximate rail patronage estimate produced in the 1965 report for these points, in view of the many variables involved and the statistical reliability of the data. The comparative figures are given below.

Station	Trips from Station Catchment to Downtown Toronto		
	1965 Report		MTARTS/MTPB 1964 Survey
	Weekday Work Trips	Estimated Peak Period Rail Patronage	Weekday Trips to Downtown Toronto between 7:00 - 9:00 a.m.
Dunbarton	910	340	440
Guildwood	2220	680	1710
Eglinton	2500	640	3114

In the case of Dunbarton the low number of trips to downtown Toronto produced from the 1964 MTARTS/MTPB Home Interview may be partially explained by the fact that trips leaving the district for downtown points before 7:00 a.m. were not included in the tabulation. There has also been considerable residential building activity in the Frenchmans Bay area since the 1964 Interview was carried out and additional trips to downtown Toronto will be produced from these new residents in the area.

These catchment areas are based on a review of the 1965 Report and represent the best judgement as to the areas surrounding each station which will produce at least 75% of the total patronage. These are considered suitable for the purpose of this report, namely to review the station locations. The limits for data collection as part of research requirements need not coincide with the catchment areas as shown on the plan. These are subject to further investigations.

A separate description of each station considered follows, highlighting the factors and analyses leading to the recommendation of their use as a stop in the trial commuter service. The mileage shown opposite each station name gives the distance from Union Station.

The number of dwelling units and the estimated number of trips between 7:00 a.m. and 9:00 a.m. to downtown Toronto points accessible to Union Station by walking, or the Yonge University subway, is given for each catchment area. This is based on output from the 1964 MTPB/MTARTS Home Interview Survey.

Present rail patronage to Union Station from stations on the C.N.R. Oakville Subdivision is shown. In addition rail patronage to Union Station during the A.M. peak period as estimated for the 1965 Report is also given.

BURLINGTON - M. 32.0

Dwelling Units in Catchment Area	9000
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	100
Present Rail Patronage to Union Station	20
Estimated Rail Patronage to Union Station during A.M. Peak	20

It is proposed that the present station will be used for the trial service. This station will be the western terminus for the proposed commuter service, as further extensions to the west would entail considerable expenditures for railway plant. It is presently planned to duplicate the existing two trains during morning and during evening peak periods, and to reverse trains on the existing branch track to Burlington Beach.

The present station is north of the residential district at Brant Street, a major north south arterial street, and can be reached by auto from all parts of the town.

A more suitable location as a commuter stop for Toronto oriented trips would be Guelph Line, approximately one mile east of the present station. This would place the station toward the east end of the catchment, in an area of residential development and convenient to Plains Road, the Queen Elizabeth Highway and the residential area of Burlington north of the Queen Elizabeth. Road access to the Guelph Line location is excellent and there is a grade separation at the tracks. Construction of a grade separation at Brant Street will complicate access to the present station in the future.

Present patronage from this station is around 20 trips per day most of which are made by the C.N.R. fast through trains stopping at Oakville and Sunnyside only. With no extra commuter service, and through service possibly restricted, there is no expectation of increased patronage from this station. The patronage potential does not warrant the expense of new station and turn around facilities at the Guelph Line location. It is recommended that the present facilities be used for the trial service, pending a policy decision based on experience during the trial as to whether service to Burlington will be abandoned or increased, or replaced with a feeder bus service from Oakville. Patronage data from Burlington will be of very limited use for research into commuter rail usage in view of the low numbers involved and problems in sampling non users with Toronto oriented trips.

Dwelling Units in Catchment Area	4600
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	170
Present Rail Patronage to Union Station	10
Estimated Rail Patronage to Union Station during A.M. Peak	10

It is proposed that the commuter service would use the existing station at Bronte. The station is not well located with respect to present or future residential development and a more suitable site would be at Third Line approximately $1\frac{1}{4}$ miles east of the present site.

The present patronage potential from this area does not warrant new station facilities. Train service will consist of two trains each way during peak periods only and while running time will be improved to Toronto any marked increase in patronage is unlikely unless service frequency is also increased. If it is decided to increase service west of Oakville as a result of the trial it is suggested that the station be relocated to Third Line. Based on present population the new location would have a catchment area which includes 6000 residences producing approximately 400 trips to downtown Toronto during the a.m. peak. The Third Line location would also attract patronage from the area between Fourth Line and Oakville Creek where there are an additional 3300 residences. This latter area will not be convenient to Oakville Station until the Speers Road extension is built across the Creek, giving direct access to Oakville Station.

Conclusion and Recommendations

Patronage potential at Bronte does not warrant new station facilities for the trial service. If service west of Oakville is increased in the future a new station location is suggested at Third Line. Patronage data from Bronte will also be of very limited use for research into commuter rail usage in view of analysis problems with a very small number of trips.

Dwelling Units in Catchment Area	10,000
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	900
Present Rail Patronage to Union Station	225
Estimated Rail Patronage to Union Station during A.M. Peak	340

It is recommended that the existing station facilities at Oakville be utilized for the proposed commuter service. This is the heaviest origin point on the present commuter service, mainly because of long distance trains stopping in addition to the locals, at prime commuting times.

Street Access

The existing Oakville Station is located just west of Seventh Line (Dundas Street) a major north-south street running from Lakeshore Road to north of the Queen Elizabeth Way interchange. Direct access to the station is possible from all directions except the west. The Oakville Creek forms a barrier just west of the station, which will remain until a new road is constructed across the Creek and parallel to the railway as proposed by the Oakville Planning Board. Despite this barrier moderately good road access is presently possible from the west via Lakeshore Road or Queen Elizabeth Way.

The Oakville catchment area is assumed to lie between Third Line and Ninth Line Roads, and from Lake Ontario to Highway #5. This is the present distribution of patrons using the existing commuter service.

Parking and Feeder Bus

There is ample open space available for parking lots and bus loops close to the station. Oakville will be the westerly limit of intensive commuter train service. Feeder bus service to supplement or substitute for train service west of Oakville could operate from this point.

Train Operation

Oakville Station is within the limits of the existing C.N.R. Centralized Traffic Control signal plant. This makes construction of train reversing facilities less expensive than would be the case were the terminal farther west on non C.T.C. territory.

Alternative Locations

An alternative station site at Kerr Street west of Oakville Creek was also considered. The necessity for a station stop at this location will be eliminated if the Speers Road extension is constructed in the future, providing direct access from the present station site to the areas west of the Creek. In

addition new track and station facilities would be required if trains terminated and turned back at this location. One of the attractions of the Kerr Street site is the possible availability of parking space in a large shopping centre near the tracks. It is questionable if this area could be relied on for use over the long term. Some permanent arrangement would have to be entered into either with the owner of the shopping centre, or to protect an area of adjacent land for parking in the future. With the Kerr Street location it would also be necessary to consider an additional station stop for residents at the east end of Oakville which might be located at Ninth Line, in the vicinity of the Ford Plant. Residential areas north of the Queen Elizabeth Highway would have inferior access to either of the two alternative sites, because of highway interchange facilities inferior to those of Seventh Line.

Conclusion and Recommendations

It is considered that the present station location offers at least equal advantages to any other site and is recommended as the commuter stop for the Oakville area.

Oakville has an excellent patronage potential and will provide data on commuter rail usage, from communities located at a 20 mile range from Union Station.

Dwelling Units in Catchment Area	3600
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	300
Present Rail Patronage to Union Station	120
Estimated Rail Patronage to Union Station during A.M. Peak	130

It is recommended that a new station be built at Fifth Line Road about half a mile west of the present station.

The present Clarkson station is located close to Clarkson Road a local collector street. It is also the scene of considerable freight switching activity.

Street Access and Catchment Area

Fifth Line Road will become a provincial highway being an extension of Highway #122 northerly to the Queen Elizabeth Way interchange and Highway #5. There is excellent high speed roadway access to a station on Fifth Line from a catchment area extending from Ninth Line Road in Oakville to Lorne Park Road, and from Lake Ontario to Highway #5.

There are large undeveloped sections in the catchment area, and the proposed site is also the optimum location for access from possible future developments. One large residential subdivision, 'Park Royal', is immediately adjacent to the proposed station site.

Parking and Feeder Bus

There is presently ample open space for parking lots at the new Clarkson station location. With the conversion of Fifth Line Road to Provincial Highway #122 a new underpass will be constructed at this crossing.

The station is well situated for feeder bus service.

Conclusions and Recommendations

Superior road access, and freedom from other railway requirements make the Fifth Line crossing the best station site in this developing area. It is therefor recommended as a commuter train stop.

LORNE PARK - M. 15.0

Dwelling Units in Catchment Area	1900
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	300
Present Rail Patronage to Union Station during A.M. Peak	90

It is recommended that this existing commuter stop be discontinued when the trial service is inaugerated. Adjacent stations are Clarkson and Port Credit, located 1.6 miles west and 2.2 miles east of Lorne Park respectively.

Street Access and Catchment Area

Lorne Park Station is located at the crossing of Lorne Park Road, a local collector road running northwest from Lakeshore Road to the south service road of the Queen Elizabeth Way. Because of the existing street pattern access to the station is limited to the local area connecting directly to Lorne Park Road. Future patronage prospects are limited to the area south of the Queen Elizabeth Highway and do not approach the potential at the adjacent stations.

Parking and Feeder Bus

There is open space close to the station site to accommodate parking lots. Because of the present street pattern and location of other stations, feeder bus service to this site would not seem a feasible project unless a decision were made to eliminate Clarkson Station to the west.

Conclusions and Recommendations

The potential patronage having convenient access to Lorne Park Station is limited to residents in the immediate area. A station stop at this location within 1.6 miles of the proposed Clarkson station would have an adverse effect on train running times. This would render the service much less attractive to all potential passengers living west of Lorne Park. Present patrons using Lorne Park Station will suffer little, if any, time penalty through using Port Credit Station in view of the improved running times between Port Credit and Toronto as planned for the trial service. The Lorne Park area can be served effectively by a feeder bus service connecting with trains at Port Credit.

Because of the superior station locations which are or can be established at Port Credit and Clarkson, Lorne Park is not recommended as a stop in the new commuter service.

Dwelling Units in Catchment Area	8200
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	1300
Present Rail Patronage to Union Station	215
Estimated Rail Patronage to Union Station during A.M. Peak	510

It is recommended that the present station location be maintained at Port Credit.

Street Access and Catchment Area

The existing station at Port Credit is located immediately west of Highway 10. Convenient access is available from a large catchment area served by Lakeshore Road and Highway 10. This extends to Lorne Park in the west north to Cooksville and east to Cawthra Road. There are also at least 500 dwelling units within a half mile walking distance of the station.

Parking and Feeder Bus

Parking facilities can be provided on both sides of the tracks. Feeder bus service can loop via adjacent local streets, stopping on Queen Street immediately opposite the station.

Conclusions and Recommendations

Port Credit is a major patronage point on the existing commuter service and has a station location with good access from a large catchment area which includes Lorne Park, a present stop recommended for elimination. Patrons now using the Lakeview Station located 1.7 miles east of Port Credit, which is also recommended for elimination as a stop, will also be reasonably convenient to Port Credit Station.

Port Credit is recommended as a stop in the new commuter service, as it serves an established major community immediately outside the Metropolitan Toronto boundary. This station should also demonstrate the ability of the rail service to attract patronage from built-up areas located some distance from the rail line, such as Cooksville and other points north of the Queen Elizabeth Way.

Present Patronage by Rail to Downtown Toronto 60

The present Lakeview Station is 1.7 miles east of Port Credit and 0.9 miles west of Dixie Road. In view of its proximity to those adjacent stops which have a greater patronage potential and ease of access, it was considered that this station be eliminated.

For analysis purposes its catchment area has been consolidated with that of Dixie Road when investigating potential station stops to serve the areas now covered by existing stations at Port Credit, Lakeview, Dixie Road and Long Branch.

DIXIE ROAD - M. 10.2

(Including Lakeview)

Dwelling Units in Catchment Area	5600
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	900
Present Rail Patronage to Union Station during A.M. Peak (Includes Lakeview)	140

It is recommended that this stop be eliminated when the new commuter service is placed in operation. (As previously stated, it is also recommended that the present stop at Lakeview be eliminated.)

Street Access and Catchment Area

The station is located on Dixie Road about 2000 feet north of Lakeshore Road. There is good auto access to the station from a catchment area between Cawthra Road and Etobicoke Creek, and from Lake Ontario to Burnhamthorpe Road. The lands immediately north of the station are used as golf courses at present and the area south of Lakeshore Road is also undeveloped. These factors and the street pattern produce only a small number of dwelling units within walking distance of the station.

Parking and Feeder Bus

There is an existing municipal parking lot at this site, and additional spaces might be provided on the municipal golf course property.

Arrow Coach Lines operates service on Dixie Road at about 120 minute headway, terminating at T.T.C. Long Branch Loop. The T.T.C. Port Credit bus operates on Lakeshore Road about 2000 feet south of Dixie Road Station

Conclusions and Recommendations

Although Dixie Road is potentially a good location for accommodation of automobile commuters, its accessibility to walking and transit passengers is limited. Its catchment area would cover both existing stations at Lakeview and Dixie Road, but access from major residential areas east of Etobicoke Creek is difficult and unattractive. Adoption of Dixie Road would likely entail a stop at Long Branch (30th Street). It is not considered that both these stops can equal the advantages of the proposed Long Branch Station site at Highway 27, therefore Dixie Road is not recommended as a station stop.

LONG BRANCH (HIGHWAY 27) - M. 9.3

Dwelling Units in Catchment Area	19,000
Total Weekday Trips Between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	3,000
* Present Rail Patronage to Union Station	260
Estimated Rail Patronage to Union Station During A.M. Peak	720

* From existing stations at Lakeview - 60; Dixie Road - 80; Long Branch (30th St.) - 120.

This station is recommended as a replacement for existing station stops at Lakeview, Dixie Road and Long Branch (30th Street).

Street Access and Catchment Area

The proposed station would be north of Lakeshore Road and west of Highway 27 beside the existing T.T.C. streetcar and bus loop. Access from the west, east and north using these major streets is good. The catchment area is considered to cover most of the area now served by existing stations at Lakeview, Dixie Road and Long Branch (30th Street). It extends therefor from Cawthra Road, Lakeview, to near Kipling Avenue and from Lake Ontario to approximately Burnhamthorpe Road.

There are a large number of dwelling units south of Lakeshore Road and east of Highway 27 within walking distance of the proposed station. The area immediately north of the site is also completely residential.

Parking and Feeder Bus

Open space for parking is very limited close to possible station locations at this site.

The proposed station site is an ideal location to test the coordination of rail and connecting transit service. The adjacent Toronto Transit Commission loop provides an excellent transfer point from transit service to the trains. Present T.T.C. service operates north on Highway 27, and east and west on Lakeshore Road at headways of at most, 20 minutes during the rush period. Arrow Coach Lines operates service west and north on Dixie Road from this terminus and the Gray Coach Lines local Lakeshore service also operates through this point. A feeder bus service from Lakeview and Dixie Road station areas could be operated to the Long Branch Loop.

The station also provides an opportunity to test the use of commuter rail service to reach work destinations outside the central business district. Employment areas are accessible by transit from this station.

Alternative Locations Considered

A study was made to compare station accessibility at three locations, namely the existing Dixie Road Station - M. 10.2, the proposed site at Highway #27 - M. 9.3, and the present Long Branch Station at M. 8.8. Retention of both Dixie Road and the present Long Branch station is ruled out due to the short distance between them, 1.4 miles.

Results are shown below and confirmed the location as proposed in terms of patronage potential.

	Number of Dwelling Units Within 5 Minutes (10' walk)		
	Walk	*On Transit	In Auto
Existing Dixie Road (including Lakeview)	250	100	5500
Proposed Long Branch (Hwy. #27)	2000	3500	12000
Existing Long Branch (30th St.)	1400	0	9000

* Considering present transit service only.

Conclusions and Recommendations

The proposed station is the closest contact between the C.N.R. lines and Highway #2, the major arterial road in the western commuter area. It has superior accessibility when compared to other possible sites and offers probably the best opportunity to test coordinated rail transit interchange possibilities in the western Lakeshore Corridor. The new location will permit consolidation of three present stations stops at Lakeview, Dixie Road and 30th Street Long Branch with the minimum amount of inconvenience to present patrons. Feeder bus service from Long Branch to the Lakeview and Dixie Road station areas could minimize inconvenience to present patrons using these stations. Improved running times on the new commuter service will help to offset any increased travel time from these areas.

The station also have potential as a destination point for work trips.

It is recommended that a new station stop be adopted for the trial service at Highway #27 and Lakeshore Road.

LONG BRANCH (30TH ST.) - M. 8.8

Dwelling Units in Catchment Area	11,000
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	1,700
Present Rail Patronage to Union Station	120

The present Long Branch commuter station is located at 30th Street, a level crossing about central in the village of Long Branch. It is recommended that this stop be relocated to Highway #27 at Lakeshore Road.

Street Access and Catchment Area

Thirtieth Street is a local street which runs from Lakeshore road to Lanor Avenue and provides fair access from a limited area between Lake Ontario and the Queen Elizabeth Way. Access from west of the Etobicoke Creek is limited to routing via Highway #2 (Lakeshore Road). Access from north and west would be via Highway 27, Horner Avenue and Thirtieth Street.

The catchment area for this station location is considered to stretch from Etobicoke Creek on the west to Kipling Avenue as the east limit, and north from Lake Ontario to about Rathburn Road. Because of the relative difficulty of approaching this station site from the area west of Etobicoke Creek another stop would be needed at Dixie Road to serve the latter area.

There is a heavy concentration of dwelling units between the C.N.R. tracks and Lake Ontario. Much of this area is within walking distance of the 30th Street crossing. The property north of the tracks is industrial for about ½ mile from the station site.

Parking Area and Feeder Bus

Existing parking space is very limited at this site, and any expansion would entail purchase of adjoining industrial land, probably west of 32nd Street.

No T.T.C. service operates via 30th Street and the prospect of such a routing is small while service is run on the adjacent arterial streets Highway 27 and Kipling Avenue, both of which are grade separated. Property would have to be purchased for any proposed bus loop.

Conclusions and Recommendations

The 30th Street location is not considered to be the optimum site in the area, as it entails problems in access, parking and feeder service, and would probably lead to one more station location than was considered necessary in the 1965 report. Thirtieth Street is therefor not recommended as a commuter station location.

Dwelling Units in Catchment Area	24,000
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	4,800
Present Rail Patronage to Union Station	190
Estimated Rail Patronage to Union Station during A.M. Peak	680

It is recommended that the existing stop at Mimico be retained for the trial service.

Street Access and Catchment Area

The present Mimico Station is located close to Royal York Road a north-south arterial street which provides direct street access to the station from a large area. The catchment area is considered to extend from Kipling Avenue in the west to the Humber River in the east, and from Lake Ontario north to Rathburn Road and Dundas Street, west and east of Islington Avenue respectively.

Patronage from Mimico has declined since completion of new road bridges across the Humber River and the Gardiner Expressway. Completion of the Bloor Subway will also materially affect the catchment area and patronage potential at this station.

It is considered that commuter rail service is best suited to serve areas beyond that served by intensive transit service. Frequent stops in the inner areas increase travel time by rail to the more distant suburbs with a resulting adverse effect on the attractiveness of commuter service to residents of the suburban areas. The Mimico catchment area is at the limit of intensive transit service and a stop at Mimico will provide valuable data on travel choice by auto and by alternative modes of public transportation between this area and downtown. This will be of value in determining inner service limits for future commuter service, particularly if combined with fare levels which reflect the premium service offered by rail and its resultant cost for short haul trips to downtown destinations.

Mimico station is close to the heavy industrial area in the town of New Toronto, and the employment opportunities in this and other areas around the station create the prospect that some commuters traffic will terminate at Mimico during peak periods. Without special transit service to some of these employment areas, access is difficult. Nevertheless there is opportunity to collect data on Mimico as a terminating point under existing or improved transit service and thus provides information on the potential for commuter rail service to serve destination stations outside the central business district.

Parking and Feeder Bus

The present C.N.R. parking lot at this location can be expanded from 100 to 150 spaces. Vacant land is not available for expansion beyond this amount.

Bus service operates on Royal York Road on at least 15 minute headway throughout the day. Combined with other T.T.C. connecting services this provides transit access from all parts of the catchment.

Alternative Location at Humber Loop M. 5.3

The possibility of relocating Mimico Station to the vicinity of the T.T.C. Humber Loop was considered. This location would provide excellent transit connections for patrons either living or working in the areas served by the present transit lines operating along Lakeshore Road and the Queensway. Since there are no residential areas within walking distance of this location and space is not available for parking, the potential for originating patronage would be limited to those arriving by transit, and the Humber Loop location is not recommended for this reason.

Conclusions and Recommendations

Mimico Station is located at the outer limit of intensive transit service. A commuter stop at this station is recommended to test response to commuter rail service where alternative public transit is available, and also patronage prospects at work destination stations other than the central business district.

Present Patronage to Downtown Toronto	10 ±
Present Commuter Patronage Destined to Sunnyside during A.M. Peak	10 ±

Sunnyside station is within the area of intensive transit service and is not recommended as an originating station for commuters destined to downtown Toronto.

There is opportunity to test terminating patronage at Sunnyside, but it is considered that this aspect of the commuter trial can be measured at several other stations where stops are made for originating traffic.

A Sunnyside station stop would add 1 to 3 minutes to all schedules, and as it offers no advantages for patronage potential or data source it should not be considered as a stop.

Street and Transit Access

Sunnyside corner in front of the railway station is a major intersection of 3 arterial streets - Queen, King and Roncesvalles, all of which carry intensive streetcar service with headways of under 2 minutes during peak periods. Direct automobile access is also good, but opportunities to arrange parking close to the station are minimum.

Under these circumstances the probable potential for originating commuters is limited to persons living within walking distance of this station.

Potential Commuter Train Patronage

There are about 4500 dwelling units presently within ½ mile walking distance of this station, and from this area 1450 weekday peak period trips to downtown Toronto. It should be noted that although at least three local and long distance trains provide service to Union Station during peak hours the present count of passengers making this trip is under 10.

There are about 25,000 employment positions within 10 minutes walking or transit time from Sunnyside corner and the present peak hour trips to this area are in the order of 300 from west of Long Branch and 350 from the eastern commuter zone. Daily use of existing train service from the west, by commuters terminating at Sunnyside, is in the order of 10 persons.

Conclusions

Sunnyside provides little potential for patrons going to downtown Toronto, and is not likely to augment data on terminating patronage sufficiently to justify an extra stop in the commuter service. It is therefore not recommended as a stop.

Dwelling Units in Catchment Area	28,000
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	8,500
Estimated Rail Patronage to Union Station during A.M. Peak	430

It is recommended that the present station be used for the new commuter service. Present service is confined to one train daily, leaving Union Station at 5:35 p.m.

Street Access and Catchment Area

Danforth Station is located 650' south of the corner of Danforth Avenue and Main Street and these two arterial streets provide good auto access from all directions to the station. The station catchment is assumed to have a westerly limit of Main Street south of the C.N.R. and Woodbine Avenue north of the railway, an easterly limit of Birchmount Road, and a northerly limit of O'Connor Drive and Eglinton Avenue, west and east of Victoria Park Avenue respectively.

Parking and Feeder Bus

Vacant railway property is available for parking at the present time on the north side of the tracks. Much of this property will be required for right-of-way for the Gardiner Expressway, which is presently scheduled for construction through this area no earlier than 1970.

There are problems in locating permanent parking areas at this station which are being investigated as part of the detailed station design.

The station is located within the Toronto Transit Commission Fare Zone 1 in an area of intensive transit coverage. The extension of the Bloor Danforth Subway will be in operation from Woodbine Avenue to St. Clair Avenue at Warden Avenue in the latter part of 1967 or early 1968. Although convenience of transfer is not ideal, since the rail station is 650 feet south of Danforth Avenue, the station will provide valuable information on the value of connecting service between transit and commuter rail services, both for work trips destined to areas served by the subway and trips originating on the transit system and destined to points close to Union Station. Additional coverage will be provided by the Main bus and Carlton car which pass the station and serves the areas both north and south of the tracks.

Conclusion and Recommendations

This station will be of value in testing the patronage potential for commuter rail service in an area of intensive transit coverage and the potential for coordinated transit and commuter rail service in the Region. It is recommended that Danforth Station be included as a stop in the trial commuter service.

Dwelling Units in Catchment Area	23,000
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	6,500
Estimated Peak Period Patronage to Union Station During A.M. Peak	940

It is recommended that a station be located in the vicinity of the crossing of St. Clair Avenue and the Oshawa Subdivision near the junction of the Uxbridge Subdivision. There is an existing station at Midland Avenue which is served by one train on weekdays leaving Union Station at 5:35 p.m.

The station location is at Midland and St. Clair Avenues approximately 1500 feet south of Danforth Road. These three arterial streets offer direct road access from all parts of a large residential area extending from Lake Ontario to Highway 401 and bounded on the east by McCowans Road and on the west by Birchmount Road. There are existing residential areas within a one half mile walking distance from the station.

Parking Areas and Feeder Bus

There is vacant land in the vicinity of the station. However satisfactory location of a lot and access to it is complicated by the future location of the Gardiner Expressway, south of the tracks, and the construction of future grade separations at St. Clair and Midland Avenues.

A bus route operates along St. Clair Avenue at the present time, running at 15' headway during rush periods. Diversion of some of the present service on Danforth Road via Midland Avenue and St. Clair Avenue would greatly improve transit accessibility to the site.

Train Operation

The station location at this site will be affected by plans to relocate the junction point of the Uxbridge Subdivision and the Oshawa Subdivision to reduce grade separation costs at Midland Avenue and at the intersection of Midland Avenue and Danforth Road. It is preferable that the proposed station be located to the west of the future junction point so that the station may also be used for commuter train service if operated over the Uxbridge Subdivision in the future.

Conclusion and Recommendations

The Scarborough Junction station site has excellent street access and a strategic location in the east end of Metropolitan Toronto. It will serve residents in a large residential area and provide data on commuter rail usage immediately beyond the outer limit of intensive transit service.

A station stop at St. Clair and Midland Avenues is recommended for the new commuter service.

BRIMLEY ROAD - M. 9.6

Dwelling Units in Catchment Area	22,000
Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	6,400

This location was investigated as an alternative to and consolidation of Eglinton and Scarborough stations, because of benefits to railway operations. It is concluded that this location does not have the patronage benefits of the combined Eglinton and Scarborough sites.

Street Access and Catchment Area

Brimley Road crosses the C.N. Oshawa Subdivision about 2000 feet south of Danforth Road and Eglinton Avenue providing access from the north and north east. As it exists Brimley Road is a two lane street, which is off the direct route for traffic from the residential areas to Scarborough Station.

This site if adopted would replace the proposed stations at Eglinton Avenue and Scarborough Junction, one mile east and west respectively, and would therefor serve all of Eglinton catchment plus the easterly section of Scarborough catchment. The catchment would cover an area from Lake Ontario to Highway 401, and from Midland Avenue on the west to Markham Road on the east, plus a section east of Markham Road, north and south of Lawrence Avenue.

Station Site

The site at Brimley Road is presently surrounded by land used or zoned for industrial purposes and there is little adjacent residential population. The possible effect of future expressway construction is more drastic at this location than at Eglinton and Scarborough as some plans for this facility recommend relocation of the railway tracks to a new alignment. In this event the commuter station would also require relocation.

Parking Areas and Feeder Bus Service

There is open property bordering Brimley Road which might be used for parking lots.

No present T.T.C. route operates on Brimley south of Danforth Road, nor would there seem reason to do so in the immediate future. The Transit Commission will revise their route pattern when the Bloor-Danforth subway is opened to Warden Avenue in 1967. This may make service via Brimley Road station site more feasible.

Conclusions and Recommendations

On the basis of comparative patronage, site conditions and access, it is not recommended that a Brimley Road station site replace the proposed Eglinton and Scarborough stations.

Dwelling Units in Catchment Area	11,000
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	3,100
Estimated Rail Patronage to Union Station during A.M. Peak	640

It is recommended that a commuter stop be located at the point where the Oshawa Subdivision crosses Eglinton Avenue. This station would be located at a distance of 2 miles from the adjacent stations at Guildwood and Scarborough Junction. The relatively close station spacing through this area is recommended in view of the high residential densities which warrant stops at frequent intervals to provide maximum access to the service.

Street Access and Catchment Area

The recommended station location is in the vicinity of the structure carrying the railway over Eglinton Avenue East, approximately one half mile west of Markham Road. Direct access to the station from west and east is provided by Eglinton Avenue and from the north east by Markham Road. The areas immediately north and south of the station are convenient to Bellamy Road. Existing apartment developments are located within walking distance of the station and vacant land close to the station is zoned for high density residential use.

Parking Areas and Feeder Bus Service

There is vacant property at the proposed location for parking purposes. Use of vacant land on the south side of the railway is complicated by the proposed future location of the Gardiner Expressway.

The Eglinton East bus route operates by the station location on a 10 minute headway, and at a shorter interval during the rush periods.

The Markham Road bus operates on a north south route which crosses Eglinton Avenue one half mile east of the proposed station. A direct transit service between the station and the north easterly section of the catchment area could be provided if some of the service on the route could be diverted to pass the station.

Conclusions and Recommendations

The Eglinton Avenue site is readily accessible from all directions in a large residential area with existing and potential apartment developments close to the station. The Eglinton East bus route will provide an opportunity to test usage of connecting transit service at this location.

Eglinton Avenue is recommended as a stop on the new commuter service.

Dwelling Units in Catchment Area	6300
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	1700
Estimated Rail Patronage to Union Station	680

A commuter stop is recommended at the point where the Oshawa Subdivision crosses Kingston Road. The station would be near the grade separation of Kingston Road and the C.N.R. Oshawa Subdivision. This is the most easterly station location in what may be considered the built up section of Metropolitan Toronto.

Street Access and Catchment Area

The proposed station site is convenient to the residential areas in the east end of Scarboro and located north and south of Kingston Road. In addition the subdivisions to the south and west have access to the station via local collector roads.

The catchment area for Guildwood includes Guildwood Village, West Hill and Highland Creek. The station may also attract patronage from residents in the Dunbarton Station catchment area in view of the relatively uncongested traffic conditions on Highway 2 between the Guildwood Station location and Highway 401.

Parking Areas and Feeder Bus Service

Vacant land is available in close proximity to the station although real estate costs are high. Use of vacant lands on the south side of the tracks is complicated by the future location of the Gardiner Expressway. This problem is common to all sites between Guildwood and Danforth.

Transit service is presently operated on Kingston Road east to Highland Creek at 15 minute headway during peak periods. Gray Coach Lines service to Whitby and Oshawa also passes the station location at 30 minute intervals during peak periods. The existing transit service in the area could be supplemented by special feeder service.

Alternative Locations Investigated

In view of the high property costs at the Kingston Road location alternative station sites were investigated east from Kingston Road to Morningside Avenue, a distance of one mile.

Morningside Avenue is the best alternative to Kingston Road as a commuter stop, it is an arterial street and has transit service at present. It is also probable that a grade separation will be constructed at the tracks and also at the Gardiner Expressway when the Expressway is built through this area in the future. However vacant land is not available for parking areas at this site.

The streets between Morningside Drive and Kingston Road which cross the tracks are residential in character at present and do not have transit service. They are therefor not recommended as alternative station locations.

Conclusions and Recommendations

Guildwood Station is located at the east end of Metropolitan Toronto in an expanding area and has adequate access from all directions except north-west. It is the only contact inside Metropolitan Toronto with the Kingston Road, the prime artery of the eastern Lakeshore corridor. This site is recommended as a commuter station location.

Dwelling Units in Catchment Area	1600
Total Weekday Trips between 7:00 a.m. - 9:00 a.m. to Downtown Toronto	430
Estimated Rail Patronage to Union Station during A.M. Peak	170

The recommended station location will serve the area of greatest patronage potential between the adjacent station stops at Dunbarton - M. 20.9 and Guildwood - M. 12.8.

Street Access and Catchment Area

The station is located at the point where Lawrence Avenue meets the tracks, near the intersection with East Avenue. These two streets provide good access to the west and north. Direct access from the east will not be possible until Lawrence Avenue is extended across the Rouge River at an as yet undefined future date.

The present catchment area is therefor restricted to an area between the Rouge River on the east and Highland Creek in the west and extending north to Highway 2. The station may also prove attractive to residents north of Highway 2 in the Woodlands East area of Pickering Township. There are only a' limited number of dwelling units within walking distance of the station. The area around the station has not been developed to date, zoning to the west and north is for heavy industry.

Station Parking and Feeder Bus

There is ample vacant land to accommodate parking at the station site. Feeder bus service could be operated to the station.

Alternative Site Investigated

An alternative site was investigated on the east side of the Rouge River. This location would serve fewer dwelling units than the recommended station. Further, the area served by this alternative will be very convenient to the recommended station in the future, when Lawrence Avenue is connected across the Rouge River.

Conclusion and Recommendations

While the patronage potential at Port Union is not high there is good automobile access to the site and space for extensive parking to meet future demand. The station location at Lawrence Avenue provides the greatest patronage potential along the 8 mile stretch between Guildwood and Dunbarton and is recommended as a stop on the new commuter service.

DE LEUW, CATHER & COMPANY
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February 4, 1966

Mr. P. E. Wade
Study Director
Metropolitan Toronto and Region
Transportation Study
P. O. Box 227
Parliament Buildings
Toronto 2, Ontario

Dear Mr. Wade:

Research in Planning
the Commuter Rail Project

The attached report is an assessment of the physical restraints on service and their impact on the research programme.

Yours very truly,

DE LEUW, CATHER & COMPANY OF CANADA LIMITED

A. J. Freedman.

A. J. Freedman
Project Manager

AJF/eh
encs.

Metropolitan Toronto and Region Transportation Study

RESEARCH IN PLANNING THE COMMUTER RAIL PROJECT
THE PHYSICAL RESTRAINTS AND THEIR EFFECTS ON RESEARCH

Introduction

This report has a twofold purpose. The first is to identify the physical restraints and describe their effects on the commuter rail system and its supporting services. The second is to discuss the limitations the restraints impose on the research programme. These topics are equivalent to Tasks I-1 and I-2 in our Appraisal Report of November 8.

The original title of Task I-2 was "Eliminate Factors Due to Physical Restraints." We now in fact find that no area of research is eliminated; the situation rather is that the topics to be investigated will be limited to a certain extent unless the restraints are removed.

In the following text each physical restraint is first identified and then discussed as to its effect on the research programme.

1. Geographic Limits for Service

These are restricted to Burlington, 32 miles to the west of Toronto, and Dunbarton, 20 miles to the east of Toronto, the junction points at which the Toronto Yard access lines connect with the main lines serving downtown Toronto. The existing railway track and signal system beyond these points cannot handle commuter traffic in addition to other freight and passenger traffic without major modifications.

This affects the research programme in that it defines the outer limits for commuter rail service as being approximately Burlington and Dunbarton.

2. Equipment Capacity

Equipment to be supplied for the service will consist of 49 commuter cars having 100 seats per car.

This will affect research results from the service only if an overloading condition is encountered producing standees. With a standee situation, there will be no actual count of what patronage may have been under ideal conditions with seats for all--this must be assessed by hypothesis based on attitude surveys.

There is an excellent prospect, however, that additional equipment such as that presently assigned to Toronto-Hamilton commuter service can be made available to minimize the effects of under-capacity. This equipment is of somewhat lower comfort standard than the new equipment, but it would appear difficult to measure its particular effect on patronage.

3. Platform Availability at Union Station

This is restricted to a single platform face and has a major bearing on the opportunity to vary train headways and train arrival and departure times at Union Station. Briefly, peak service in these circumstances can only be operated at intervals of 10 minutes for successive trains going east and west, producing headways of not less than 20 minutes for each direction. Under this arrangement train schedules are interdependent for each direction. Use of a second platform and track would remove the restraint on a fixed 20-minute headway and make eastward and westward operations independent of one another. This step would provide scheduling flexibility and reduce the impact of any train delays on train service in the opposite direction.

Effects of this restraint on research are discussed below.

4. Train Headways

Peak-period headways will consist of trains at no closer than 20-minute intervals in one direction. If it is found possible during the trial to provide more than one platform track in Union Station for commuter service, trains might be operated at closer than 20-minute headways, although a 20-minute average headway over the peak period must be maintained due to limitation on track and signal capacity at points outside the Station to handle commuter and other railway traffic.

It will therefore be possible to produce information directly from the trial service which will measure the patronage produced with a 20-minute average or greater headway, but not with closer service frequency.

Off-peak period headways are variable but would not be reduced below a one-hour minimum without confirmation that this is possible from the Railway.

5. Arrival and Departure Times at Union Station

Train times at Union Station are variable within the 20-minute headway limitation. They are, however, restricted by a 10-minute time interval between successive trains in opposite directions with a single platform.

This will have an affect on the opportunity to test the optimum train times at Union Station independently for service in both directions unless a second platform track can be made available during the course of the trial service.

Train schedules can be adjusted semi-annually and are subject to confirmation by the Railway.

6. Train-Running Times

These will be determined by equipment assignment, track and signal facilities, and station locations at the outset of the service. On the assumption that service will be operated at maximum speed from its commencement, no significant variation is possible except through elimination of stops. The effects of any major reduction in travel times cannot be measured directly during the trial period with train service as presently planned.

7. Station Location

Stations cannot be added or moved during the research period for practical reasons. There are an adequate number of station sites (13) to provide information on the sensitivity of patronage to station location and its bearing on convenience for walk in, transit, and auto patrons.

8. Parking Facilities

Where there are parking lots used to capacity and there are indications from attitudinal surveys that more people would ride if parking were to be expanded, this reaction will be impossible to test if, in fact, no increase in supply can be obtained.

Parking lots will be located as close as possible to the stations. In cases where the distance from lot to station is unduly long it may be impossible to test more favourable conditions for auto drivers because of excessive costs in developing closer sites.

9. Feeder Bus System

There are no restraints on the scope for investigating feeder bus service. A bus service will connect all present stations closed for purposes of the trial to a station stop.

10. Transfer to Connecting Transit Services on Routes Passing Stations

Under present conditions at Union Station, the transfer operation between commuter rail and subway is indirect and involves a distance of 800 feet and several changes of level. It will not be possible to test any significant improvement in this situation without major reconstruction, although the walking distance could be reduced to about 550 feet if the northerly station platforms were to be used.

The convenience of transfer at outlying stations is related directly both to T.T.C. service and physical conditions at each station. It may be possible to co-ordinate rail and T.T.C. services and test the effects on patronage. Major improvements in the physical convenience of transfer may not be possible during the trial because of the cost involved.

11. Station Design

The ability to make changes in station design in terms of passenger comfort is dependent on the outcome of a policy decision as to the quality of shelter to be provided at stations from the outset. The influence on patronage of improvements from a simple windbreak-type shelter to an enclosed waiting room might be measured during the trial at one or a number of locations where the opportunity for improvement exists.

12. Equipment Design

For practical reasons the only feature of equipment comfort which may be varied during the trial service will be seating arrangements. The use of both 2-2 and 3-2 seating would provide an opportunity to observe and obtain comments on passenger reaction to both types of seating. This would be of value in any future equipment design specifications.

13. Ticketing Methods

It is highly improbable that any significant variations in ticketing methods will be possible during the trial period. A policy decision is pending on whether ticket collections will be carried out on the train or at the stations. In the latter case, automatic fare collection methods may be adopted. Passenger reactions to the system adopted can be obtained from attitude surveys.

Within the context of a relatively invariable fare and ticket system, some minor changes might be introduced concerning form of fare available and quality of ticket used. The feasibility of introducing such changes would be dependent on the fare collection method finally adopted.

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April 5, 1966

Mr. P. E. Wade, Study Director,
Metropolitan Toronto & Region
Transportation Study,
Box 227, Parliament Buildings,
Toronto 2, Ontario.

Dear Mr. Wade:

Commuter Rail Project
Market and Service Analysis

The attached report describes our analysis of commuter train schedules, using 1964 MTPB-MTARTS home interview survey as a source of information, for travel in the Lakeshore Commuter Corridor.

We have derived a set of recommended train times at Union Station during peak periods but find no pattern in the survey tabulations which would dictate specific off-peak schedules.

Yours very truly,

DE LEUW, CATHER & COMPANY OF CANADA LIMITED

A. J. Freedman.

A. J. Freedman,
Project Manager

AJF/feh
encl.

METROPOLITAN TORONTO & REGION TRANSPORTATION STUDY

MARKET & SERVICE ANALYSIS

TRAIN SCHEDULES AND FREQUENCY OF OPERATION ARRIVAL AND DEPARTURE TIMES AT UNION STATION

Introduction

During preparation of the January, 1965 report, the data then available was studied to determine the train schedule times at Union Station, best suited to the arrive and leave work times of the population living in the Lakeshore commuter corridor. It was concluded that the data was not sufficiently detailed or reliable to derive a convincing calculation of desired times at Union Station. However, since peak period headways were strictly defined at twenty minutes, with trains at Union Station alternatively running east and west every ten minutes, arrival and departure times were completely linked to a single schedule decision. It was therefore possible to produce a set of peak period times at twenty minute intervals which suited requirements of the known potential patronage as closely as possible.

Further information is now available in the form of tabulations from the 1964 MTARTS - MTPB home interview survey. These figures show the time pattern by six minute intervals for travel by all modes between the central Toronto points adjacent to the Yonge-University Subway divided into downtown and uptown areas, and the lakeshore corridors. The corridor zones follow the C.N.R. Oshawa and Oakville Subdivisions from Scarborough Station to Dunbarton, and from Long Branch station to Burlington. Travel from origins closer to the centre of the City than Scarborough and Long Branch, about 9 miles out, were considered well served by transit. Furthermore operation of commuter service at times suitable to short trips may not serve the outer zone commuters adequately. The investigation was therefor limited to the relatively longer trips for train scheduling purposes.

Based on the assumption that demand for commuter rail service should reflect the travel time pattern as obtained for trips by all modes in the 1964 home interview survey, it is possible to use this data as a guide in setting train schedules.

It should be noted that the data from the home interview survey is based on expansion of a 3% sample and on accumulation of trips by six minute intervals, and thus has its limitation as a definitive source for setting train schedules. However, since headway is defined by track capacity, a good judgement of optimum operating times can be gained. Factors affecting the conclusions are outlined below. Comments are also made on the necessity for off peak service, although the available data does not justify detailed comment on such service.

Hours of Service

The two corridors of travel under study differ somewhat in the characteristics of travel and peak hour service requirements. Using a criteria of 600 trips by all modes per 20 minute period to either commuter corridor as a rate which will produce sufficient rail patronage to merit peak service headway, the A.M. peak period starts about 7:00 A.M. for traffic from the east, and at 7:30 A.M. from the west. Travel in both corridors decreases below the suggested rate for peak service by 9:00 A.M. However, trips from the both directions are higher than the day time average until around 10:30 A.M.

Outbound trips rise above the daytime average at about 3:00 P.M. and although traffic to the eastern corridor in particular rises between 3:00 and 4:00 P.M., no peak period service to the east need start before 4:00 P.M. The flow to the west builds up more slowly and does not warrant close headway service before 4:30 P.M. Demand to the east drops off completely at 6:15 P.M., but continues in the western corridor to about 6:30 P.M.

The information provided from the MTARTS-MTPB home interview survey gives little guidance on the extent or level of non-peak period commuter service required. The general suggestions in the January 1965 report, which outlined hourly off peak service from 9:00 A.M. to 4:30 P.M. and from 6:00 P.M. to midnight, would still appear valid, except that in the afternoon, peak service to the east should start at 4:00 P.M. and possibly operate in both corridors until about 6:30 P.M. Other indications of heavier than normal traffic such as that in the 9:00 to 10:30 A.M. period will require further study during operation of the commuter service.

Peak Hour Service Frequency and Scheduled Times at Union Station

The tabulated figures derived from the 1964 MTARTS-MTPB home interview survey were reviewed in detail to determine the optimum times for operating peak period train service to and from the eastern and western lakeshore commuter corridors.

The total trips by all modes from each corridor east of Scarborough and west of Long Branch have been tabulated by the time to the nearest six minutes when they arrive or leave the Toronto central area. It is possible from this information to derive a series of theoretical arrive and leave times at Union Station for these trips, as though they were all made by rail, in order to arrive at or leave their City location at the times as tabulated.

In the tabulations the central area was divided into two parts; the downtown section running from Union Station to College Street along the Yonge-University Subway, and the uptown part from College to Eglinton. Using MTPB figures for employment in the area, and measured travel times from Union Station to centroids of employment, it is possible to calculate a range of times and an average time to travel from the commuter platform to place of employment. From this information a graph of travel flow or desired times at Union Station has been prepared, which together with the ranges of travel times to the station, is sufficient to derive optimum schedule times for arriving and departing trains.

Time to Union Station

In the downtown area south of College Street between Spadina Avenue and Parliament Street, the employment centroids of the 10 census tract zones range from 7 to 15 minutes away from the commuter platform with an average time for the employed population of 10.5 minutes. Seventy-eight percent of the downtown employment is within 11 minutes of the commuter platform.

These figures assume that persons employed south of Queen Street will generally walk to Union Station, while those from Queen to College will use the Yonge-University subway.

The uptown area runs from College to Eglinton, adjacent to the Yonge-University subway. Travel time to or from the commuter platform ranges from 13 to 25 minutes with an average for the employed population of 16.5 minutes. Eighty-five percent of present employment is 16 minutes or under from Union Station.

Average Desired Arrival and Departure Times

A series of graphs were prepared showing in theory how total trips by all modes, if made by rail, would be distributed at Union Station by six minute intervals during the peak rush periods. These figures were derived by subtracting 10.5 minutes from the downtown arrival tabulations of present travel by all modes, or 16.5 minutes from the uptown. Similarly these times were added to the evening departure tabulations to produce a graph of desired departure times for commuters from Union Station. With the graphs as basic data, travel flow curves were drawn for both peak periods, and optimum train operations estimated. The travel flow curves are attached to this report.

Derivation of Train Operating Times

Certain judgement factors are required to assume optimum times for operating peak period service to and from Union Station. The headway restraint must be taken as given, which limits peak hour service to 20 minutes minimum between trains in the same direction.

Judgement factors are as follows:

1. During the preparation of the 1965 Commuter Rail Project Report it was found that comparable total times by rail were more nearly equal to automobile times in the eastern corridor than in the west. In the report there was a decision to favour western trains where necessary in matters of arrival and departure at Union Station to make the overall service more nearly equal in attractiveness.

2. Uptown points from College Street north are more directly accessible from the eastern zone by other modes of travel. Trips from the western zone are comparatively more direct by train and subway to uptown points. Schedule emphasis is likely more competitive for western to uptown trips than eastern to uptown.

3. The average times to Union Station used for the graphs is satisfactory for 85% of uptown employment, but only for 78% of those working downtown. An extra 3 minutes time would increase the downtown employment within 14 minutes travel time of Union Station to 98%.

Proposed Arrival and Leaving Times for Commuter Trains

With any preference necessary being given west end trains the proposed peak schedule would be as follows:

A.M. arrivals from east:	7:05, 7:25, 7:45, 8:05, 8:25, 8:45 A.M.
A.M. arrivals from west:	7:40, 8:00, 8:20, 8:40 A.M.
P.M. departure to the east:	4:15, 4:35, 4:55, 5:15, 5:35, 5:55 P.M.
P.M. departure to the west:	4:40, 5:00, 5:20, 5:40, 6:00 P.M.

Optimum and proposed operating times are shown by arrows on the passenger flow diagrams.

Schedules for Non-Peak Period Trains

An examination of present arrival and departure times from the east and west commuter corridors, as tabulated from the 1964 home interview survey, shows no particular pattern of demand for off peak service. There would appear no reason to assume from this evidence that any interval or timing of schedules would be preferable on the basis of existing travel habits. Use of off peak service will undoubtedly create new travel patterns showing the influence of train times. Probably some refinement of schedules can be made once the new service is in operation, based on passenger interviews and other data collected.

There is no indication from the home interview survey results that headways closer than 60 minutes in each direction are needed at the commencement of the service. During off peak periods travel by all modes between the Lakeshore corridors and the downtown area of Toronto averages about 250 trips per hour. The main requirement is that service operate regularly at hourly intervals, and that irregular schedules for operating or other considerations be kept to a minimum.

Care should be taken to avoid large service gaps at any time, particularly before and after peak period operations. For illustration, a higher than average outward movement from downtown is shown in the tabulations between 3 and 4 P.M. to both commuter corridors. While this activity does not dictate a specific schedule time, undoubtedly some extra service is required during the hour.

Based on experience in American centres, other periods probably requiring higher levels of service are 9 A.M. to 10:30 A.M. and 6 P.M. to 7 P.M. It is possible neither of these intervals will produce heavy volumes of riders, but extra service may be necessary to maintain the quality of the whole operation, thereby inducing travel by persons with varying working hours.

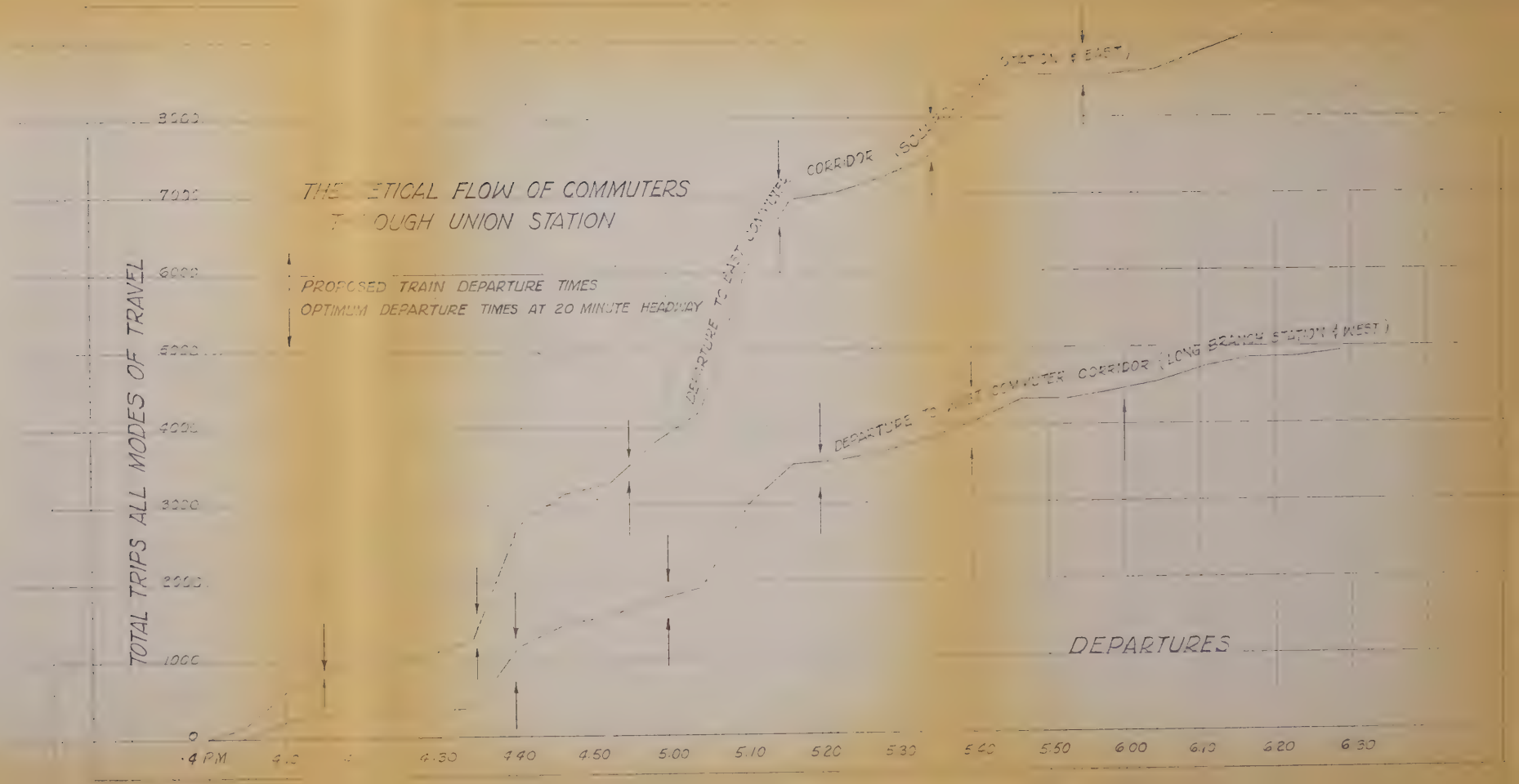
Running time from Oakville to Dunbarton should be 70 to 80 minutes, depending on the number of stops established. A scheduled off peak service on the hour from one terminal and on the half hour from the other, seems practicable. This would entail a 180 minute cycle for each train, or 90 minutes in each direction, with 10 to 20 minutes turnaround and contingency time. Hourly service can be provided under these conditions with no more than 3 trains in service.

Conclusions and Recommendations

As indicated in the introduction and elsewhere in this report, the tabulations derived from the 1964 home interview survey are not considered detailed enough to definitely pinpoint peak period train times at Union Station. They do give a reasonable indication of the duration of peak period travel demand, but little guidance as to non peak service requirements.

Because of the stringent headway requirements, the whole peak period schedule for each direction is dependent on a single time-table decision in both morning and evening periods. In the present analysis the key times from each direction are 8:25 and 8:40 A.M. arrivals and 5:15 and 5:20 P.M. departures based on the home interview survey expansion. The arrive and leave times to and from the west correspond exactly with those in the January, 1965 report. In the eastern corridors it is recommended that the peak period service, both morning and evening cover a more extended period.

Regular off peak service is recommended as a matter of policy with a maximum of hourly headway. Certain off peak hours require more refined study than is possible here, notably the period from 9:00 A.M. to 10:30 A.M., from 3:00 P.M. to 4:00 P.M. and from 6:00 P.M. to 7:00 P.M. Demands for closer than hourly headways may be experienced when the service is in operation during these periods, and this extra service should be possible at minor additional expense.


THEORETICAL FLOW OF COMMUTERS
THROUGH UNION STATION
PROPOSED TRAIN DEPARTURE TIMES
OPTIMUM DEPARTURE TIMES AT 20 MINUTE HEADWAY
TOTAL TRIPS ALL MODES OF TRAVEL
8000
7000
6000
5000
4000
3000
2000
1000
0
4 P.M.
4.30
4.40
4.50
5.00
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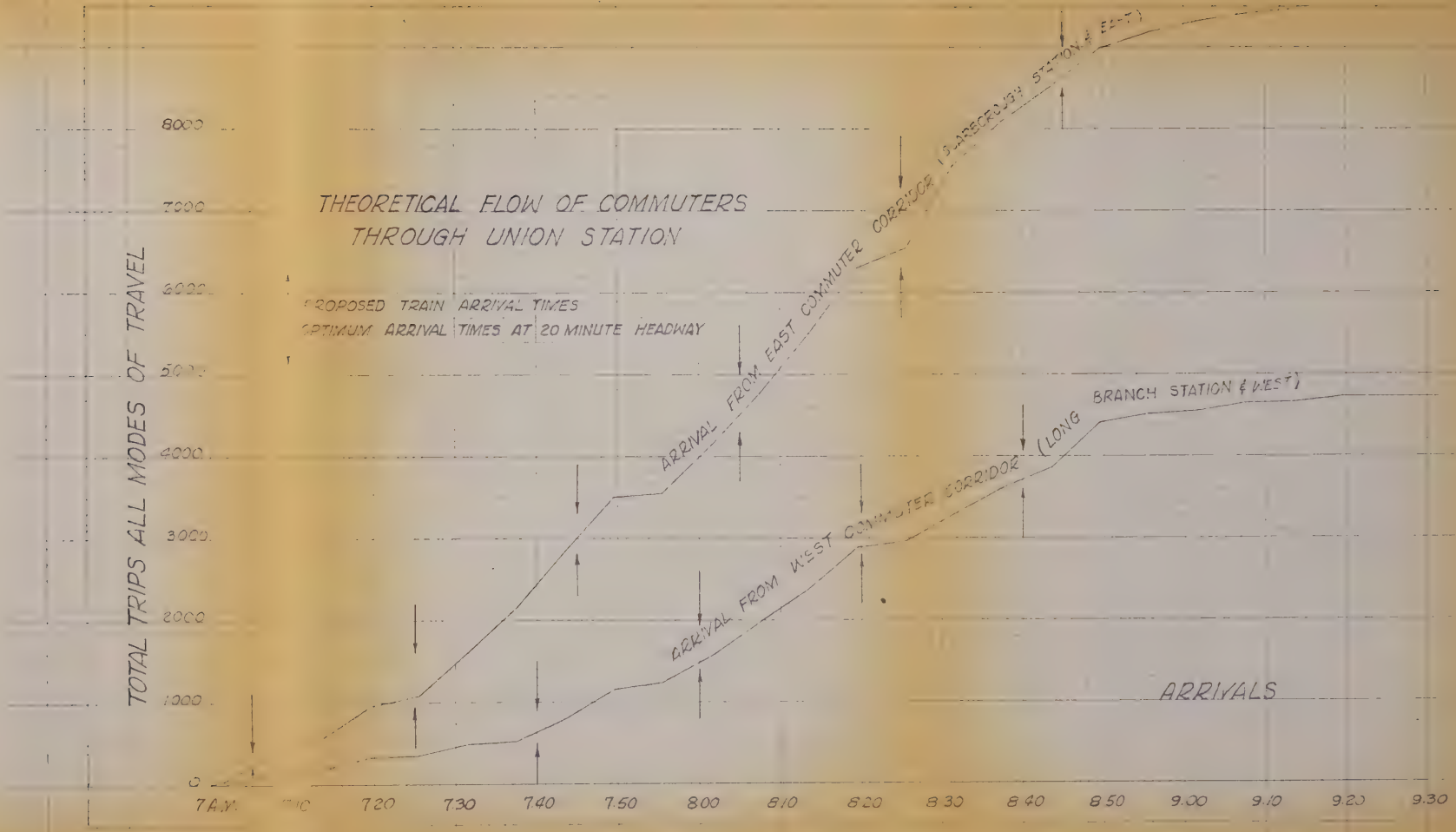
5.20
5.30
5.40
5.50
6.00
6.10
6.20
6.30
DEPARTURES
DEPARTURE TO EAST COMMUTER CORRIDOR (LONG BRANCH STATION & WEST)


THEORETICAL FLOW OF COMMUTERS
THROUGH UNION STATION
PROPOSED TRAIN ARRIVAL TIMES
OPTIMUM ARRIVAL TIMES AT 20 MINUTE HEADWAY
TOTAL TRIPS ALL MODES OF TRAVEL
8000
7000
6000
5000
4000
3000
2000
1000
0
ARRIVAL FROM EAST COMMUTER CORRIDOR (PARKSBOROUGH STATION & EAST)
ARRIVAL FROM WEST COMMUTER CORRIDOR (LONG BRANCH STATION & WEST)
ARRIVALS
7 A.M.
7.20
7.30
7.40
7.50
8.00
8.10
8.20
8.30
8.40
8.50
9.00
9.10
9.20
9.30

DE LEUW, CATHER & COMPANY
OF CANADA LIMITED
CONSULTING PROFESSIONAL ENGINEERS
1127 LESLIE STREET
DON MILLS, ONTARIO
445-2221

April 7, 1966

Mr. P. E. Wade,
Study Director,
Metropolitan Toronto & Region
Transportation Study,
P. O. Box 227, Parliament Buildings,
Toronto 2, Ontario.

Commuter Rail Project
Market & Service Analysis

Dear Mr. Wade:

We attach our report on Connecting Feeder Bus and Transit Service to the commuter trains.

This report is a review of the whole Lakeshore commuter corridor, with comments and recommendations on the most likely areas for running bus feeders and arranging connections with the existing transit system.

Yours very truly,

DE LEUW, CATHER & COMPANY OF CANADA LIMITED

A. J. Freedman

A. J. Freedman,
Project Manager

AJF/feh
encls.

METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

MARKET AND SERVICE ANALYSIS

CONNECTING FEEDER BUS AND TRANSIT SERVICE

I INTRODUCTION

An important aspect of commuter rail service is its accessability to passengers by means of feeder bus service connecting directly with the rail service, and also the convenience of transfer to connect with the existing transit network. The use of such connecting service varies widely on existing commuter operations elsewhere, depending on the opportunities provided for patrons to transfer between connecting services and the trains. For example, bus patronage to commuter service in Boston was 2% of all originating rail commuter patrons in surveys conducted in 1963, but was 22% in Philadelphia in a 1959 one day survey of the Reading Railroad Chestnut Hill Line. These two figures represent very different patronage conditions. While the Boston lines generally serve satellite towns in an area beyond extensive metropolitan transit service, with little special provision made for transfer from local bus lines, the Philadelphia line runs through a built up urban section and is encouraged as an interconnecting link for transit patronage.

Experiments and studies carried out in the United States give some guidelines as to the degree of success which might attend the operation of connecting service in the Toronto area. These are as follows:

1. Connecting transit service in the downtown area is of primary importance. In Boston and Chicago special distribution bus routes are operated for rail patrons.

2. The greatest transfer patronage response is obtained in built up areas where commuter rail can, in effect, be a convenient link in the transit service.

3. Connecting vehicles should meet every commuter train and provide service for the whole commuter operation day, to achieve best results.

4. Poorest results were obtained from feeder service in satellite towns where street congestion is not great, nor station parking difficult.

5. Some success has been experienced with feeder service in the outer ring of the built up suburban area, at considerable cost to the sponsoring agency.

The proposed Lakeshore Commuter Service will operate through a variety of urban and suburban situations. This report describes the areas where various types of interconnecting service could be tested and observed, to provide information on the importance of this service feature to commuter rail operation in the Toronto area. These areas were selected to be representative of the various types of development which surround Toronto.

II ANALYSIS OF CONNECTING SERVICE

Types of Service Considered

These fall into four categories:

1. Feeder bus service to intermediate stations.

2. Feeder bus service to extend limits of commuter rail service.

3. Feeder bus service from areas outside to the north of the Lake Shore Commuter Corridor.

4. Connecting transit service.

The areas which show greatest promise for testing connecting service are discussed below. Tables A and B attached, list the services which might be operated or improved. Also noted in Table A are the dwelling units and socio economic data for areas adjacent to each suggested feeder route. These latter figures are derived from statistics averaged by data zone along the bus routes. As some of the zones are large, the data in Table A should be regarded as a guide to, but not on exact measure of the area adjacent to each route.

Routes and Schedules

As the commuter trains are to operate on 20 minute headway, there appears no need to consider closer intervals for feeder bus service, even if traffic concentrations require more than one bus to meet each train. Buses should be scheduled to arrive at a suburban station about 5 minutes before each inbound train, and to leave immediately after each outbound train. Contingency time will be necessary in the bus schedule to assure proper connections. There would not appear to be much prospect of serving traffic in both directions with a single feeder run, except possibly at the terminal points of Oakville and Dunbarton, where a two way connection would be practicable.

In the event that more than one bus is required to meet a peak period train some thought might be given to operating a limited stop service to cover sections of the route affected. Care should be taken in this circumstance that the off peak bus service is not prejudiced by demands for continued special routings and stops which are only justified by peak period operations.

Bus routes can follow arterial streets exclusively, or might operate through subdivisions via residential streets, providing a closer pick-up service. Since headways are a function of train service, the prime considerations in planning of service routes are:

1. Total length of trip for bus riders.

2. Number of buses required for 20 minute headway.

The routes of the Toronto Transit Commission fit the role of feeder service to the commuter trains in varying degrees. The most necessary change needed in T.T.C. service is that of headway, to fit the commuter train operations. The longest headway on any of the routes considered is 20 minutes and these routes might be rescheduled to fit the train times. A twelve or fifteen minute bus schedule would require additional vehicles to fit the role of feeder to the rail service, if all trains are to be properly connected.

Scope of Feeder Service Tests

The entire Lake Shore commuter corridor has been examined to differentiate the types of communities served and to design appropriate routes fitting the general situations of urban development in the corridor.

As noted, experience with bus connections in United States cities differs by type of area served. In the Toronto commuter corridor these areas may be roughly defined as urban to about 8 miles from Union Station, built up suburban from 8 to 12 miles out and developing, or outer ring suburban from 12 miles to 20 miles from Union Station. Only one obvious satellite town situation exists in the Lake Shore corridor, this being Oakville.

As described in greater detail in the following section on routes, a series of feeder bus services and connecting transit lines have been investigated, to produce a choice of situations where tests and observations may be made. Because of the practical circumstance of the Lake Shore commuter service, and the number of unknown factors to be studied, a tentative time table of connecting service operations and tests is outlined in the concluding remarks. These suggestions are based on present knowledge of mandatory service requirements to serve areas where existing station stops are closed, and existing transit services in the areas studied.

The following descriptions of connecting service are listed by type of service, and the commuter station used for transfer of passengers. For analysis purposes routes and services are considered under general headings of Feeder Service to Intermediate Stations, Extension of Rail Service, Service North of the Commuter Corridor and Connecting Transit Service.

Reference is made in the detailed descriptions to the type of area served.

The stations and services discussed are located in general metropolitan areas as follows:

Downtown Distributor:	Surface and Subway Lines at Union Station.
Urban Residential:	T.T.C. Lines at Danforth and Mimico Stations.
Suburban Residential:	T.T.C. Lines at Eglinton, Scarborough and Long Branch Stations, also Lakeview-Dixie Road Feeder Route.
Developing or Outer Ring:	T.T.C. Scarborough Bus east of Guildwood Station, Feeder Bus from Lorne Park to Port Credit.
Satellite Town:	Feeder Service in Oakville, also Feeder line from Streetsville to Port Credit.
Extensions of Service:	Feeder buses from Oakville to Burlington and from Dunbarton to Ajax and Oshawa.

III DESCRIPTION OF ROUTES

1. FEEDER BUS SERVICE TO INTERMEDIATE STATIONS

There are two areas in the western commuter corridor where the proposed elimination of existing train stops will probably entail a substitute bus service providing equal schedules if possible, to downtown via an adjacent open station. This situation provides an opportunity to measure patronage reaction to the mode change and possible improvement in service. As some buses are likely to operate under any circumstances, plans should be made to utilize this service for as much data collection and analysis as possible.

Service to Replace Lorne Park Station. This feeder bus service should cover as much of the existing walk-in patronage as practicable. This is an area of outer ring development with higher income and relatively high car ownership. According to the 1961 M.T.P.B. on train survey, 60% of the walking patronage originated within 1/4 mile of the station, most of the remainder coming from 1/2 to 1 mile west. It is considered therefore that a bus service on Lorne Park Road to Port Credit Station would be at least as convenient as the existing walk to the commuter train stop.

A direct service from Lorne Park crossing to Port Credit would take about 20 minutes round trip, permitting one bus to provide connection to every commuter train from Port Credit. A more extensive service might loop via Lorne Park and Mississauga Roads. This round trip would require 30 minutes, and need more than one bus to provide connection with every train.

Service to Replace Lakeview and Dixie Road Stations. Walking patronage in 1961 was clustered around Lakeview station, but more scattered at Dixie Road. A limited stop bus service could run from Long Branch station, west on Lakeshore Road and loop via Alexandra Avenue, South Service Road and Dixie Road in 20 minutes. Because of the street pattern in the area, a more local service would require up to 30 minutes to serve both Lakeview and Dixie Road station sites and return to Long Branch.

The areas to be served are completely built up, for the most part with small single family dwellings. This is a westward extension of the Metropolitan residential suburb, the only section of this type on the Lake Shore corridor not directly served by the T.T.C. transit network.

There are also large new residential subdivisions in the areas of outer ring development which might warrant feeder bus service to the closest commuter station. Communities such as Park Royal adjacent to Clarkson Station, or Bay Ridges which lies south of Dunbarton, originate comparatively high numbers of peak period trips to downtown, and this patronage might find local feeder bus service a convenience.

Service routes in these areas would be comparatively short, possibly attracting potential walk in patronage in addition to park and ride commuters.

2. FEEDER BUS SERVICE TO EXTEND LIMITS OF COMMUTER RAIL SERVICE

There are opportunities in both commuter corridors to extend the limits or concentration of commuter service by use of feeder buses. The transportation geography tends to be similar in both outer areas beyond 20 miles from Union Station, each having a small city - Burlington and Oshawa - at about 35 miles out, and a mixture of large towns, isolated subdivisions and row highway development from 20 to 35 miles from downtown.

The major difference in the outer ends of the east and west corridors is the influence of the City of Hamilton 45 miles west of Toronto. This large urban area tends to increase interurban traffic in the western Lake Shore corridor, and serves as a counter attraction to Toronto for employment. None the less, although Burlington is essentially a suburb of Hamilton, the proposed feeder routes serve comparatively more peak hour trips from Burlington to downtown Toronto than from Oshawa. The latter is a more self contained employment centre rather than a dormitory town.

Service West of Oakville, could operate via Lake Shore Road as far as Burlington, supplementing or perhaps replacing the planned rail service to Burlington station. This route would operate through a continuously built up stretch including Bronte and Burlington, a relatively high income strip development following the Lake Shore Road for 12 miles. By contrast the railway tracks are some 1.5 miles north at Bronte, well away from present residential development.

A feeder service would take about 1 hour from Oakville station to Burlington and return. One bus might replace the existing train service between these points, and three vehicles would provide 20 minute headway.

An alternative to operating to Burlington would be a loop route via Lakeshore Road through the built up section west of Oakville Creek. A large part of this area could be served with one bus on a 20 minute return schedule. This line would be a local collector route in a large satellite town, in addition to being a short extension of rail service.

Service East of Dunbarton would take a similar pattern to that proposed for the western corridor. It could not replace commuter rail service, as none is presently proposed, and although the geography of development has the same pattern as the Oakville-Burlington section, the feeder service would generally run through a different socio-economic section of the Toronto centred region.

Feeder service might run from Oshawa and Whitby; via Kingston Road between these points, and then Highway #401 from Whitby to Dunbarton. This route would serve two established urban areas at 30 and 35 miles from Toronto, plus the built up development between them. The schedule would be one hour return trip, requiring 3 buses for 20 minute headway.

A shorter service could operate from Ajax to Dunbarton via Kingston Road (Hwy. #2) giving connections to a relatively new townsite 25 miles from the metropolitan centre. Service would also be provided to development along the highway. This route could be covered by a 30 minute return schedule requiring two buses for full peak period service.

3. FEEDER SERVICE FROM AREAS NORTH OF THE LAKESHORE COMMUTER CORRIDOR

Certain residential centres lie north of what is generally considered to be the limit of passenger attraction to the proposed Lake Shore commuter rail service. Some of these points have direct access to proposed commuter stations and one of these, the Streetsville-Cooksville area, may merit a test of feeder bus on patronage attraction to the rail service. Streetsville is a town of about 10,000, 20 miles from downtown Toronto and 10 miles from Port Credit Station. There is no similar situation adjacent to the eastern Lakeshore Commuter Corridor.

A route from Streetsville could run east to Highway #10 and south through Cooksville to Port Credit Station. The round trip would require one hour operating time, which means 3 buses would be needed to provide 20 minute peak headway.

4. CONNECTING TRANSIT SERVICE

The proposed commuter rail service will stop at a number of stations including Union Station, where the existing Toronto Transit Commission bus, subway and streetcar network may provide convenient connections for both terminating and originating rail commuter traffic. Each station affected is examined below with comments on the quality and extent of transit service, and possible improvements to serve potential rail-transit connecting traffic.

Union Station

This will be the terminating station for the vast majority of rail commuters, being the closest point to the central business and commercial area of the city. A large number of employment positions are located within walking distance of Union Station. A second mode of access which will prove convenient to uptown and Bloor Street points is the Yonge-University subway. Trains operate at 2 1/2 minutes headway during peak periods and traffic from commuter trains will generally be travelling against the direction of heavy movement. Accommodation for transferring rail commuters should therefore be more than adequate.

Two bus lines run near Union Station which may prove convenient to passengers with destinations not close to subway stations. The Bay and Downtown routes operate north on Bay and Yonge Streets respectively, from the corner of Bay and Front about 1000 feet from the proposed commuter train platform. The Downtown bus is looping at this point, and a short extension of the route past the front door of Union Station should be practical. The Downtown route presently operates only at off peak hours.

Long Branch Station

This station is to be constructed in a suburban area immediately adjacent to the T.T.C. Long Branch loop providing potentially good transfer facilities between rail and transit. Originating traffic can ride to the loop from north, west and east, on the Queensway and Port Credit buses, or the Long Branch car. The Port Credit bus line operates at 20 minute headway and will require coordination with the train schedules to be completely effective connecting route. The Long Branch streetcar has a 3 to 4 minute headway at peak periods, and the Queensway Bus operates via two branches, each having 15 minute peak headway.

The Long Branch transfer should prove attractive to some terminating patronage, especially persons employed in the Long Branch-New Toronto industrial complex parallel to Lakeshore Road. Commuters from the west in particular will have a convenient connecting service to this area, via the Long Branch streetcar.

Superior service from the north would result with a bus operation on Highway 27 north of the Queensway.

Mimico Station

The Royal York bus operates at 15 minute all day headway past Mimico Station, on a route at right angles to the proposed commuter service. The potential for both originating and terminating connecting transit passengers is limited by the direction of the route and the geography of the area close to the station. There are no major employment concentrations adjacent to Royal York Road, and access to the Lakeshore and Queensway complexes requires an additional transfer, between transit vehicles.

The necessity of transferring could also discourage originating traffic from using transit facilities to Mimico station. The present transit network is oriented to movement toward the city, and this pattern will likely become more intense with the opening of the Bloor Subway extension to Islington Avenue in 1967. Without special feeder service operation, Mimico Station does not appear to have good transit connection potential. A loop service from Mimico to Long Branch Station via the Queensway and/or Lakeshore Road, might be tested as a combination originating-terminating connecting route.

Danforth Station

This location is in a built-up urban area with intensive transit service, which may change in pattern with the opening of the eastern extension of the Bloor-Danforth subway in late 1967. Because of this fundamental change soon after the commuter service is inaugurated, it is suggested that no special provision for connecting services be made until later. Data measurement before and after the subway extension may prove that specific connecting service is unnecessary.

The station is some 650 feet south of Danforth Avenue, and it will be about 1000 feet from the railway to the subway platform. These factors make transfer between the commuter service and the Bloor-Danforth route awkward, with the potential subway transfer more difficult than the existing connection to the Bloor streetcar.

There will be convenient access to the Mortimer-Main bus and the Carlton streetcar, which operate on an overpass close to Danforth Station. These routes are mostly useful to destination traffic employed along the transit lines.

Under present circumstances, it is not considered that significant interconnecting patronage between transit and commuter rail service will occur at Danforth Station. The situation may change with opening of the subway extension, and special service and fare arrangements may be justified by future experience and data analysis requirements.

Scarborough Station

It is proposed to locate Scarborough Station in a suburban residential section close to St. Clair Avenue, on which the Woodbine bus presently operates at 10 minute headway during peak periods. This route would provide a convenient connection for passengers originating in the residential area immediately east and south of the station.

Extension easterly of the Woodbine route and diversion of the Danforth route via Midland and St. Clair Avenues would provide additional transit connecting service to and from much of what is considered the Scarborough catchment area. The latter change would encounter two railway grade crossings and may be unfeasible at the present time.

Eglinton Station

This station will be immediately adjacent to Eglinton Avenue in an area of developing residential concentrations, and convenient to the Eglinton East bus route, which operates at 10 minute headway during peak traffic periods. This route would originate connecting traffic in an area considered tributary to Guildwood Station. It might also attract some terminating rail patronage destined to the "Golden Mile" industrial area about 2 1/2 miles west of the proposed station.

Another potential connecting route for originating traffic would be the Markham Road branch of the Scarborough route which operates at 20 minute peak headway, to divert this line past Eglinton Station, providing a direct connection for passengers from the north-east.

Guildwood Station

The Scarborough route originates some 2 miles east of Guildwood in an area of outer suburban development and operates on a 20 minute peak headway past the station site. Some coordination of schedules will be necessary to achieve a proper connecting service with this line.

IV SERVICE AND FARES

The possible feeder and connecting services outlined should provide sufficient variation in routes, residential characteristics and service to investigate a wide range of conditions affecting commuter patronage.

The major changes possible in feeder service organized by the Transportation Study are generally limited to route variations, as headways are tied to train service. In areas where more buses are required to effect improved connections, some service comparison might be made by adding vehicles. It may be difficult to remove service at any specified time, and therefore a build-up is likely more controllable.

Fares on organized feeder service might be integrated with the commuter tariff to provide a through ticket from the area served. If parking fees are charged at the rail station connected, it may be interesting to test a through tariff providing for either feeder service or park and ride privileges at the connection station. This would allow flexibility in choice of originating transportation with no loss to the rider.

The suggested Toronto Transit Commission route variations may not fit the intentions of the Commission, thus these connecting services could prove relatively inflexible. However, there should be opportunities to arrange improved headways and schedules on existing T.T.C. lines, providing more convenient connections to the commuter service.

There would appear to be only one or two areas within Metropolitan Toronto, near Mimico and Guildwood Stations, where a special feeder service could be desirable. The organization of such routes would again require the sanction and cooperation of the Transit Commission.

There may be room for coordination of fares with the T.T.C. service. The simplest form of transit-commuter train intermodal fare appears to be that used in Montreal, where a transfer ticket obtained on the originating transit route is good for a free transfer to downtown routes, when leaving the commuter train. This might be arranged on the basis of a single T.T.C. ticket providing a transit ride on both ends of the commuter trip.

V CONCLUSIONS AND RECOMMENDATIONS

The proposed Lakeshore Commuter service between Burlington and Dunbarton has stations located in a variety of urban and suburban situations. The various new routes suggested, and possible transit connections cover the service possibilities of the Lakeshore corridors in as much detail as possible. With experience gained from some or all of these services it should be possible to gauge the need for connections and feeders in other Toronto rail corridors.

Special feeder services have often proven costly undertakings in commuter experiments in the United States. As noted in the introduction, response varied by the type of district served, and ability to lower net costs was related to the quality or level of service provided.

It is our recommendation that feeder and connecting service experiments be phased throughout the project in order that an estimate of costs and potential patronage can be gained before some of the possibly less remunerative services are inaugurated. Phasing will also allow time to review the effectiveness of the commuter service as a whole. In some instances, train capacity problems may make encouragement of additional traffic unadvisable, or results impossible to assess.

Special service inaugurations or extensions during the initial or opening period of commuter rail service should include only those feeder and connecting transit arrangements demanded by mandatory service requirements and centre city distribution needs. It is recommended therefore that the Lorne Park and Lakeview-Dixie Road feeder bus routes be inaugurated at the commencement of the rail service, and that the T.T.C. Downtown bus route be extended along Front Street past Union Station and operated through morning and evening peak periods as well as during the day.

It is recommended that T.T.C. headways be phased to the commuter service, particularly where peak period bus headways are greater than 10 minutes. Changes in routings and service on existing T.T.C. lines, or organization of special feeder routes within Metropolitan Toronto, should await a clearer indication of the potential response to these changes. At that time the extent of financial involvement should also be more accurately determined and decisions made on routes for further testing. Experience with the recommended feeder routes, and with other interconnecting transit lines, should also be reviewed before further arrangements are made. There would appear to be little restrictions on the timing of transit and feeder service variations, and changes can therefore be made comparatively quickly if this is warranted.

The Lakeview and Lorne Park areas are representative of suburban and outer ring residential developments, respectively. If results indicate that these situations are adequately measured by the feeder service, it may then be desirable to organize routes and connections in other typical situations such as satellite towns or extensions of commuter rail. No recommendation is made on the timing of these other feeder experiments. It appears that a decision must be based on the

cost of service and the value of data collected. If the services to Lakeview and Lorne Park prove to be significant originators of traffic, the requirement for feeder tests in other areas would be of greater importance.

Short run connecting service into new subdivisions close to commuter stations might be considered once some measure of response to feeder and connecting bus routes is obtained. Examples of this type of outer ring development are Park Royal adjacent to Clarkson Station and Bay Ridges south of Dunbarton.

A final test of transit-commuter rail interconnection would be some sort of intermodal fare. As outlined previously, the simplest form of this is a free transfer privilege from originating to terminating transit vehicle. It is recommended that some arrangement of this nature be made after response to existing transit service and coordinated schedules has been measured.

TABLE A

SUGGESTED FEEDER BUS ROUTES TO
CONNECT WITH LAKESHORE RAIL COMMUTER SERVICE

Route	Area Served	Unduplicated Route Length (Miles)	Approximate Return Time	1964 Statistics of Area Adjacent to Route			
				Dwelling Units	Trips to Downtown 7-9 A.M.	Average Income per Worker	Average Cars per Dwelling Unit
Burlington - Oakville Stn.	Lakeshore Road	12	60'	7750	275	$6380	1.15
S.W. Oakville - Oakville Stn.	Lakeshore Road and north between 4th and 5th Lines	7	30'	3220	315	$6060	1.22
* Lorne Park -Port Credit	Lakeshore and North via Lorne Park and Mississauga Roads	6	30'	1790	360	$6650	1.40
Streetsville -Port Credit Stn.	via Hwy. #10 through Cooksville	10	60'	4600	490	$5320	1.31
* Lakeview -Long Branch Stn.	Lakeshore Rd. and north from Alexandra to Dixie Rd.	5	20'	1750	370	$5080	1.22
Ajax - Dunbarton	via Kingston Rd.	6	30'	2250	50	$4330	1.00
Oshawa- Dunbarton	via Kingston Rd. Hwy. #12,Hwy. #401	14	60'	10680	40	$4570	1.07

* Recommended Routes at inauguration of Commuter Rail Service


STREETSVILLE ROUTE
LAKEVIEW – DIXIE RD. ROUTE
LORNE PARK ROUTE
WEST OAKVILLE ROUTE
BURLINGTON – OAKVILLE ROUTE
AJAX ROUTE
OSHAWA ROUTE
METROPOLITAN TORONTO
LAKE ONTARIO
BURLINGTON
BRONTE
OAKVILLE
CLARKSON
LORNE PARK
PORT CREDIT
LAKEVIEW DIXIE
LONG BRANCH
MIMICO
SUNNYSIDE
UNION STATION
DANFORTH
SCARBOROUGH
EGLINTON
GUILDWOOD
PORT UNION
DUNBARTON
BRONTE ROAD
SEVENTH LINE
SOUTHDOWN RD.
HWY. 122
BRANT STREET
HIGHWAY 2
ROYAL YORK RD.
YONGE ST.
WOODBINE AVE.
VICTORIA PARK
MORNINGSIDE AVE.
MIDLAND AVENUE
DANFORTH AVENUE
EGLINTON AVE.
BELLAMY RD.
KINGSTON RD.
TILLEROOD RD.
BASE LINE RD.
LAKESHORE BLVD.
TORONTO HARBOUR
EXISTING T.T.C. BUS ROUTES
34 & 34B – EGLINTON EAST
73 – ROYAL YORK ROAD
74 – PORT CREDIT
80 & 80A – QUEENSWAY
86 – SCARBOROUGH
91A – WOODBINE
LEGEND
T.T.C. CONNECTING LINES (EXISTING SERVICE)
POSSIBLE FEEDER BUS LINES
T.T.C. SUBWAY
PROPOSED COMMUTER STATIONS
OTHER STATIONS
METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY
COMMUTER RAIL PROJECT
EXISTING TRANSIT CONNECTION & PROPOSED FEEDER BUS LINES
SCALE: 1" = 2 Miles
MARCH, 1966
DE LEUW, CATHER & COMPANY OF CANADA LTD

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Mr. P. E. Wade, Study Director,
Metropolitan Toronto & Region
Transportation Study,
P. O. Box 227,
Parliament Buildings,
Toronto 2, Ontario.

Commuter Rail Project
Market and Service Analysis

Dear Mr. Wade:

The attached report contains the findings of a review of experience gained locally or in other cities on the effects of fees at commuter station parking areas on patronage.

In summary we have found little published information of value in this connection and in view of this have included some suggested guide lines for parking policy in our report.

Yours very truly,

DE LEUW, CATHER & COMPANY OF CANADA LIMITED

A. J. Freedman.

A. J. Freedman,
Project Manager

AJF/feh

METROPOLITAN TORONTO & REGION TRANSPORTATION STUDY

MARKET AND SERVICE ANALYSIS

EFFECT OF PARKING FEES ON COMMUTER PATRONAGE

Introduction

Parking availability at originating stations will be a major factor in the attractiveness of the Lakeshore commuter rail service as a whole. Unrestricted free parking at stations would provide ideal conditions to attract maximum patronage and also to simplify the analysis of commuter rail usage versus travel by other modes.

In practice however this ideal condition may prove difficult to achieve. The high cost of property at several station locations may lead to a policy decision to charge a parking fee. It may also be found that demand for parking spaces may exceed the number of spaces as planned for use when the rail service is commenced, including the number of spaces provided for unforseen or future demand in the acquisition of property. It may also prove impractical to further increase the capacity of the lots for economic or other reasons.

Where parking demand exceeds supply at some lots but adjacent lots have spare capacity, experience in other cities has shown that a judicious application of a fee policy can lead to optimum use of the spaces available.

Research on Parking Fees at Commuter Lots

Reports from other centres have been reviewed to ascertain if information has been developed which will indicate the likely effect of parking fees at commuter stations on patronage. No specific test of this nature has been found in the literature available and there is no local experience to draw on. Adjustments in parking fees have been used however to attract passengers from heavily used lots to stations where parking is available, also to provide space for off peak commuters. Results of these tests are discussed later in this report and show that commuter patronage is sensitive to parking fee as might be expected.

It is most doubtful if information from other cities concerning parking fees and their effect could be applied in anything but general terms to this project. Even if all other service features were equal there are a number of other factors associated with parking such as lot location, rail fares and downtown parking costs which vary from city to city and which, in combination with parking fees, would influence park and ride patronage.

Possible Effects of Parking Fees

In general terms the possible effects of parking fees on commuter patronage are fairly obvious. The fee will affect those who wish to drive and park at the stations and may:

(a) Be accepted by some intending patrons.

(b) Cause other patrons to change their mode of arrival at the station to feeder bus, car pool, being driven or walk.

(c) Lead to some commuters rejecting the commuter service completely.

(d) Divert some park and ride patrons to other lots which are free or at a lower rate.

The rates charged for parking would also have an important bearing on the reaction of commuters to a parking fee. It would appear that the relationship between parking rates and patronage can only be established by studies or tests conducted as part of the trial service.

Use of Fee to Optimise Lot Usage

As an example of this sort of policy, parking lots adjacent to the Boston MTA Rapid Transit Lines were used for a controlled experiment in 1963-64, where reduction of parking fees increased subway revenues until a substantial improvement in total gross revenues were induced. A rule of thumb was derived from this experience indicating the direction fees should move at each individual lot.

1. Where parking space occupancy is 85% or more, raise the fee.

2. Where occupancy is 75% to 85%, do not change fees.

3. Where occupancy is under 75%, lower fees.

The parking lot charges in Boston ranged from 10 to 50 cents while the transit fare was generally 20 cents each direction, except for one line, the Highland Branch which ran through zones, requiring 30 and 40 cent fares to downtown.

Typical results of the Boston experience are as follows:

Parking Lots on Highland Branch (MTA Rapid Transit) *

Station	Approximate Dist. to Downtown (Park Street (Miles)	Capacity of Lot (Spaces)	Fee ($)	Jan. 1963 Occupancy	Fee ($)	Jan. 1964 Occupancy	Fee ($)	Mar. 1964 Occupancy
Brookline Village	3.3	160	.35	59%	.10	92%	.35	94%
Chestnut Hill	6.0	55	.35	100%	.35	100%	.35	100%
Eliot	9.1	57	.35	100%	.35	100%	.35	100%
Waban	9.8	42	.35	100%	.35	100%	.35	100%
Woodland	10.7	390	.35	70%	.10	94%	.25	54%
Riverside	11.3	1600	.35	19%	.10	38%	.10	48%
Totals		2304		36%		55%		55%

* After Mass Transportation in Massachusetts; Final report to Mass Transportation Commission, July, 1964.

The transit route considered here is a former lightly used railway commuter line converted to rapid transit, and presently operated with three unit PCC streetcars, which run directly downtown and connect into the MTA surface-subway system. The outer station (Riverside) is adjacent to a high capacity ring highway, Route 128.

This experiment was chiefly concerned with achieving better use of Woodland and Riverside parking lots at the outer end of the line. Riverside parking lot was not readily visible from adjacent major streets, and therefore was badly underused. Adjustments in fee, and publicity policies were needed to attract patronage, which was apparently driving downtown once Woodland lot was full. The net result of the new policy by March 1964 was an apparent gain of 400 daily patrons.

With the return transit fare being $ .80 from these stations, this change represents a calculated gain in total revenue of approximately $200 per day.

Conclusions

The effect of station parking fees on patronage are unique to each mass transportation system in view of the wide variation in other service factors and local conditions which would, in combination with the parking fees, affect a decision as to use of the service. Information is not available locally or from other centres which measures the effect of parking fee on patronage. This could only be obtained by actual observation during the trial service.

Suggested Guidelines for Parking Policy

It is suggested that parking be provided free at the commencement of the Lakeshore commuter service in order to induce a maximum number of commuters to try the service. Parking is free for users of the present C.N.R. commuter service and a charge for parking at the outset of the commuter service could have an adverse effect on public relations.

Where excessive demand occurs at some lots while other lots are under-utilized, an information programme should be used to advise commuters where space is available and thus optimise use of the lots. A measure of parking adequacy as used in Philadelphia is the existance of spaces at 3:00 p.m. on a weekday.

With continuing excessive demand the lots affected could be expanded based on information obtained from on train and non user surveys as to probable requirements.

At stations where parking expansion is not feasible an attempt should be made to encourage those who will not be greatly inconvenienced to use adjacent station parking lots with surplus capacity or where space is available for parking lot expansion. This may be accomplished by applying a charge for parking at the overcrowded lots or a higher fee at these lots if a policy of pay parking has been adopted for the service.

A practical minimum rate for parking should cover the net cost of collection, that is the additional capital and operating cost for conversion from a free lot to a pay lot.

It would seem reasonable to assume that the maximum rate for parking when combined with rail fares should not exceed the all day cost for downtown parking, ($1.00 to $1.50) if the commuter service is to remain economically attractive.

Off-peak travel would be encouraged through elimination or reduction of parking fees after 10:00 a.m. on weekdays. Parking capacity is more than adequate for evening and weekend use and parking at these times would also be encouraged by elimination of parking charges.

Uncertainty as to parking availability from day to day at popular station parking lots will not encourage regular commuters who wish to drive to the station. Reserved parking space made available free or at a fee to purchasers of multi rate tickets should prove attractive under these conditions.

Parking space at such stations as Long Branch, Mimico and Danforth may be taken up by other than patrons of the train service. This problem may be controlled through making purchase of a rail ticket, a condition of use for these lots.

DE LEUW, CATHER & COMPANY
OF CANADA LIMITED
CONSULTING PROFESSIONAL ENGINEERS
1127 LESLIE STREET
DON MILLS, ONTARIO
445-2221

May 16, 1966

Mr. P. E. Wade, Director,
Metropolitan Toronto and Region
Transportation Study,
P. O. Box 227, Parliament Buildings,
Toronto 2, Ontario.

Re: Commuter Rail Project
Market and Service Analysis

Dear Mr. Wade:

Attached is our report on Fare Structure. This was prepared with the assistance of Mr. H. E. Bixler, Systems Analysis and Research Corporation.

Yours very truly,

DE LEUW, CATHER & COMPANY OF CANADA LIMITED

A. J. Freedman,
Project Manager

AJF/feh

METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

MARKET AND SERVICE ANALYSIS

FARE STRUCTURE

I INTRODUCTION

The investigation of the sensitivity of patronage to fares has been recommended as one of the Lakeshore Commuter Service experiments. The results of such investigations will be of value in determining the economics of rail commuter service, and in guiding policy with respect to fare structure in the future.

The purpose of this report is to provide information which will assist in a decision as to the revised fare structure to be used in the Lakeshore Commuter Service experiments.

Fare policy for commuter rail service should be based on an evaluation of travel by all modes in the area served by the rail service, if it is to fit into the context of an overall transportation policy. The ultimate fare policy can lie between two extreme conditions designed to produce either maximum patronage without regard to net cost, or maximum profit (minimum loss) conditions.

The factors which would influence the fare structure for testing are:

1) Costs to provide travel by commuter rail service

2) User costs for other travel modes in the corridor and present fares for commuter rail service.

3) The probably future policy with regard to fares.

These are discussed below, with guidelines for analysing commuter rail costs, and the manner in which they may be passed on to those directly benefiting from the service.

Recommendations

It is recommended that for analysis and agreement purposes the costs of the rail commuter service be identified as fixed, semi fixed and variable, based on a method derived in Boston Massachusetts to facilitate cost analysis and subsidization of rail commuter operations. Using on this approach, a suggested fare formula of 40 cents basic charge plus one cent per passenger mile appears to satisfy existing conditions in the

Recommendations (cont'd)

Lakeshore corridor as closely as possible. Conclusions and recommendations are summarized in Section VII. Details of the approach recommended are developed throughout the report.

II EXPERIENCE IN OTHER CENTRES

Boston- An extensive experiment was conducted in Boston during 1963-64 when fares and quality of service were varied on two commuter railroads. At the same time extensive cost analysis methods were developed to determine the experimental service costs, and to gain an insight into the long-range economics of public support for rail commuter service.

In the first phase of the experiment, fares were reduced by an overall average of 30% and service frequency was increased by 70%.

In the second phase fares were increased to their former level and service remained at the frequency of the first phase.

The primary conclusion drawn from the experimental fare and service changes was that peak-hour patronage was relatively insensitive to the fare adjustments, but extremely responsive to service variations. Off-peak users of commuter service were sensitive to both fare and service fluctuations; with the longer distance travellers seemingly more sensitive to fares than those taking short trips.

These observations and the accounting methods developed, led to a rationale for setting fares which attempted to distribute costs among patrons by a form of responsibility accounting of the fixed and variable costs incurred in rail commuter operations. The formula derived tends to charge high per mile rates to short-distance passengers, reflecting the extensive capital and overhead expense incurred in providing a basic train service, even without consideration of operating costs. The general approach is discussed in more detail below.

Philadelphia- Fare experiments in Philadelphia have generally been limited to introducing a simplified set of zone fares, ranging from 30 to 70 cents basic tariff, with appropriate reduction for multiple ticket purchases. Another general policy is provision of transfer privileges to certain connecting surface transit lines for 10 cents. The fares offered are generally lower than those charged immediately prior to subsidization of the service. A percentage of the new patronage attracted to the service was influenced by the new fare structure, but there is no record of any controlled experiments in this field.

III COSTS TO PROVIDE COMMUTER RAIL SERVICE

In the analysis adopted for Boston these costs are divided into three main categories, namely:

Fixed Costs

Semi-Fixed Costs

Variable Costs

The manner in which the various items of cost may be apportioned to each of these categories depends on the desired end result for the costing, and the form of agreement under which the service is operated.

The method as adopted for use in Boston was as follows:-

1. Fixed Costs

The costs which do not vary with either level of service or train miles operated once the geographic limits and equipment requirements of the basic service have been defined. These would include such items as costs to provide fixed facilities and equipment, management and overhead costs, and maintenance of track and structures.

2. Semi-Fixed Costs

These include items which would vary in a non-linear relationship to the service provided, and would only alter if level of service or equipment in service was varied drastically. Examples would be clerical costs and periodic equipment maintenance costs, such as mechanical inspections and car cleaning.

3. Variable Costs

These are items which are directly related to the level of service provided and train miles operated, such as crew wages, fuel and equipment repair on a mileage basis.

In the case of the Lakeshore Commuter Service the extent of the system and level of service has for all practical purposes been defined for the experimental period. Thus the annual fixed and semi-fixed costs to set up and manage the service may be considered as constant. Since the basic design of the service is to provide accommodation for peak-period traffic, these costs may be considered the responsibility of every peak-period user of the service. In other words the size of plant, equipment and non-operating personnel assembled to provide the given level of service at peak hours is chargeable to every user of the service during this period.

The manner in which these costs should be apportioned to users of the service item by item could be contentious. Some recurring expenses such as equipment capital costs are obviously chargeable equally to peak period users irrespective of distance travelled; but others, such as track maintenance expenses are often accounted as a variable cost, distributed by the number of trains or tons operated by the various parties involved in a joint operating agreement. Nonetheless, analysis of costs in Boston has identified monthly maintenance of way fixed costs chargeable to the commuter operation, and these are paid as an agreed monthly sum. Maintenance expenses are therefore regarded in the cost analysis as fixed.

Undoubtedly a detailed study of railway accounting procedures will be needed prior to agreeing on a means of payment. The Boston approach to costing and pricing seems reasonable as a method of responsibility accounting which identifies the various elements of cost, and charges these to the patron in as equitable a manner as possible. This rationale is used in the assessment of costs and fares shown below.

Cost Components

The following costs are shown to illustrate the manner in which costs for the Lakeshore Commuter Service might be apportioned. They are based either on costs derived from the January, 1965 Commuter Rail Report, or assumed as noted, and are used for illustrative purposes only.

	Annual Amount
1. FIXED COSTS	
Maintenance of Fixed Facilities, Use of Existing Fixed Facilities, Management and General Overhead, Promotion and Advertising-----(Assumed)	$1,000,000
Amortization of Equipment and New Facilities	547,000
	$1,547,000
2. SEMI-FIXED COSTS	
Equipment Maintenance and Repair on a Time Basis	390,000
Switching Costs	139,000
Station and Sales Staff	107,000
	$ 636,000
3. VARIABLE COSTS	
Fuel and Locomotive Service on a Mileage Basis	377,000
Car Service and Supplies on a Mileage Basis	106,000
Casualties	32,000
Crew Wages	792,000
Incremental Station Costs	63,000
	$1,370,000
Total Estimated Annual Cost of Service	$3,553,000

In actual operation of the service a more refined delineation of costs may lead to a closer accounting of the items listed. As will be seen, however, the more important factors in setting of fares are market conditions and overall transportation policies. It is not considered that differences in the procedure of accounting certain costs will seriously affect the approach used here.

Cost Apportionment

The fixed and semi-fixed costs are applied to users of the peak period service. This charge may be expressed as cost per seat supplied during peak periods, assuming that each seat is filled only once during each of the inbound and outbound trips, and neglecting standees.

Cost Apportionment (cont'd)

Estimated Cost per Seat Trip is:

$$\frac{\text{Annual Fixed and Semi-Fixed Costs}}{\text{Annual Peak Period Seat Trips}}$$

Example:

$$\frac{\$2,183,000}{253 \text{ days} \times 2 \text{ trips} \times 50 \text{ cars} \times 100 \text{ seats}}$$

= $0.86

The variable costs are to a large extent dependent on the train miles operated and can therefore be applied in relationship to the distance travelled by an individual passenger. The charge can be expressed as a cost per seat mile and converted to cost per passenger mile on the basis of the ratio of seat miles to estimated passenger miles as follows:

Estimated Cost Per Passenger Mile $= \frac{\text{Variable Costs}}{\text{Seat Miles}} \times \frac{\text{Seat Miles}}{\text{Estimated Passenger Miles}}$

Using seat mile and passenger mile figures from the January 1965 Report:

Example: $\frac{\$1,370,000}{258,562,000} \times \frac{258,562,000}{45,715,000} = \$0.03$

Based on the figures assumed for the example, it will be seen that peak service fares would be made up of a fixed amount of $0.86 per trip plus $0.03 per passenger mile. This would produce peak-period charges, for example, to Long Branch of $1.14, to Oakville of $1.50.

This formula charges the full costs of the commuter service to fares. As shown in Table I the fares derived by this method are far out-of-line with existing charges or out-of-pocket driving costs in the commuter corridor. It can be concluded that the calculated full cost rates are well above what the commuting public is prepared to pay, under existing competitive conditions.

A complete analysis of fare policy must therefore assess the travel market conditions, and if it is found that probable revenues from a feasible fare structure do not cover costs, an examination of the likely subsidy policy for commuter rail service is also required.

IV USER COSTS FOR OTHER MODES IN THE CORRIDOR

The present multi-rate charges for daily commutation trips on the existing C.N.R. and Gray Coach services, Boston and Maine comparable fares, and estimated automobile costs are shown in Table I.

Gray Coach does not carry commuters in the zones of intensive service by the Toronto Transit Commission, and charges a sliding scale of approximately 30 cents plus one cent per mile from downtown dependent on the distance travelled. A six month

IV. USER COSTS FOR OTHER MODES IN THE CORRIDOR (cont'd)

experiment in Boston in 1963 indicated a heavy passenger preference for commuter rail service, when parallel and equal bus and rail services were offered. From this experience, it may be judged that rail fares could be set at a slight premium over bus commuter rates without discouraging rail patronage. This policy would also tend to minimize any adverse effect by the new rail service on existing Gray Coach operations.

One way costs for automobile transportation shown in the table are based on an estimated out-of-pocket operating cost of $.04 per mile, plus one dollar per day parking fee divided by two. These figures are an indication of the highest out-of-pocket per passenger cost likely by auto travel, considering that many of the auto commuters interviewed in 1964 reported free parking at their downtown destination, and many travelled by car pool.

The C.N.R. commuter tariff is about 2½ cents per mile in the area where multi-rate fares are offered from Union Station to Oakville, with a minimum of 25 cents for trips under 10 miles. In the context of the present assessment of commuter service costs, the C.N.R. fares do not reflect fixed and variable costs as incurred by commuter trip length. Some modification of the existing fare pattern appears necessary if a rational cost structure is to be used for the new service.

Future analysis of market research data and other indications of awareness of cost may dictate refined approaches to ticket pricing which would in turn influence the overall fare policy. An attempt is made here to produce a fare formula which will reflect competitive costs in the commuter corridors. If awareness of operating costs on the part of auto drivers is not great, or response to the commuter service is below that expected, a different approach to fares may be needed on the basis of further analysis.

V EFFECT OF POLICY ON PRICING COMMUTER TRAIN SERVICE

Review of the rates necessary to pay the cost of a rail commuter service, and even a liberal assessment of competitive costs and charges in the commuter corridor, will lead to the obvious conclusion that the proposed rail service must be underwritten by public support. The maximum size or degree of such subsidy on a gross or unit basis is outside the terms of this report. It will probably be related to the funds required to underwrite other forms of transportation, and the relative public demand for the various modes of travel. It will be developed in Section VI how a subsidy figure might be applied, in order to keep control of the net cost of providing commuter service.

Future policy decisions affecting fare structure and level would reflect response to the commuter service, and the measured unit cost of underwriting each commuter trip or commuter mile. Such decisions would also be guided by a detailed evaluation of other transportation modes in the corridor. This will require analysis of many factors in both government transportation costs, and charges and costs to the individual commuters. One necessity in any fare accounting system is a rational approach to these problems of comparative costing. Information should be quickly available to assist in policy decision making, with as little post operation statistical analysis as possible.

V EFFECT OF POLICY ON PRICING COMMUTER TRAIN SERVICE (cont'd)

As outlined previously, commuter service costs may be divided into fixed, semi-fixed and variable elements. Study of the possibility of covering these costs from fare charges, leads to the conclusion that the opportunity to minimize any subsidy figure lies principally in the area of variable costs. On the basis of present patronage estimates, any feasible per mile charge will result in a loss on variable costs. There is an opportunity, however, to adjust per mile charges to the point that seat occupancy and variable revenue are optimized.

An analysis of fixed and semi-fixed costs and the feasible maximum charge per peak period seat shows that a subsidy figure underwriting each commuter fare must be assumed for the service level and costs under study. This figure can be regarded as relatively invariable for any given cost of railway plant and equipment. Major decisions dependent on analysis of fixed costs and applicable revenues would be those affecting the frequency of service offered, or the size of physical plant to be operated, at a future stage in the commuter service.

VI DERIVATION OF A SUGGESTED FARE FORMULA

Peak Period Fares- An examination of the Gray Coach commuter fares shown in Table I indicates charges of about 30 cents plus one cent per mile, compared to a full cost rail charge of 86 cents plus three cents per mile. As noted in Section IV, a fare slightly above that of the commuter bus service should be an acceptable charge in either corridor. In this case a forty cent basic seat charge plus one cent a mile would be about the lowest necessary tariff to satisfy competitive conditions. Receipts at this rate would cover approximately three quarters of the fixed and semi-fixed costs, and about one third of the variable costs if passenger miles do not exceed the estimates in the January 1965 Report, where a seat mile occupancy of seventeen percent was predicted. The one cent per mile charge would require an occupancy ratio of fifty percent in order to cover the variable costs incurred by the service. This analysis uses the costs described in Section III.

A calculation of the effect of a fare formula of 40 cents plus one cent per mile follows:

Total Annual Fixed and Semi-Fixed Costs	$ 2,183,000
Annual value of 40 cent charge per passenger based on January, 1965 Report of Patronage estimate $0.40 x 3,980,000	1,592,000
Annual Subsidy on Fixed Costs or $0.23 per peak-period seat	591,000
Total Annual Variable Costs	$ 1,370,000
Annual value of one cent per passenger mile charge assuming the 1965 Report estimated passenger miles $0.01 x 45,715,000	$ 457,150
Annual Subsidy on variable costs at seventeen percent seat mile occupancy	$ 912,850

This calculation indicates a total subsidy of $1,503,850 per annum to meet the estimated costs of commuter service. As explained, the most likely area for reducing this figure is in the variable cost account, through inducing increases in passenger miles (seat occupancy ratio) or increasing the fare charge per mile. Experience will likely show that a discerning variation in per mile charge will create a situation where the maximum number of longer distance passengers are using the service, producing the high seat occupancy ratio desired.

Off Peak Fares - A high off-peak use of the service will tend to diminish the fixed subsidy, calculated above. In setting off-peak fares, a level of minimum fixed charge should be derived in addition to applicable total fare charges, to attract a more cost sensitive type of patronage. The off-peak charges suggested in Table II represent the basic multi-rate fares rounded to five cent increments. These fares are still related to competitive conditions in the corridors, and should tend to encourage the longer distance trips which are more remunerative and tend to be more valuable in terms of passenger miles converted to rail riding. In Boston off peak patrons riding longer distances appeared more sensitive to fare prices than those taking shorter trips.

There is opinion and experience indicating that off peak fares should be lower than the suggested multi rate fare. Experience with the Lakeshore service may conclude that a rate of thirty cents plus one cent a mile for example, is more remunerative than the fares outlined in Table II. However, the reaction of competitive transportation agencies must be carefully assessed before a low series of off peak fares is introduced. This could be an area where experimental flexibility is possible once certain basic objections to low fares have been met. Continuous experimentation should be made during the trial period to derive an optimum tariff encouraging off peak and weekend travel.

Intermediate Trips - Fare levels for intermediate trips should follow the same rationale of a basic fare plus a per mile charge. This type of traffic at peak hours tends to utilize seats which can also be used for short run patronage going downtown. If possible such trips should be encouraged with a lower basic charge, as traffic from this source will considerably improve the seat occupancy ratio and the net revenue position of the service.

A charge of thirty cents plus one cent per mile would result in peak period fares examples of 39 cents from Oakville to Port Credit, or 42 cents from Pickering to Scarborough. Actual operating experience will be required to ascertain the importance of this type of traffic. No specific schedule of fares is included here for intermediate trips not bound to Union Station.

Forms of Tariff and Tickets

As outlined in the January, 1965 report, forms of multi-rate commuter tariffs vary, dependent on the city and railway involved. Considerable experience has been gained with 10, 20 and 40 ride tickets. In addition, monthly flash passes are used in some centres, to simplify on train ticket collection. Little statistical information can be derived from flash pass tickets unless special on-train counts are also made. Their use on a commuter system, requiring accurate passenger data is therefore not considered practicable.

Forms of Tariff and Tickets (cont'd)

Examples of multi-rate tariffs to Union Station are shown in Table II. These figures are based on the suggested multi-rate fare, multiplied by the tickets sold, except for the 10 ride ticket. In the case of the monthly pass, the basic charge is multiplied by 46 to estimate the probable rides taken in an average month.

Premium and special low rates should also be considered to optimize the financial position of the service. A high one-way tariff is advisable at peak hours to underwrite the cost of irregular riders at this time of day. The 10 ride ticket is also regarded in this context. Experience with commuter service in the United States, indicates the importance of family tariffs to off-peak patrons. A half-fare charge for children at non-peak hours should be easily arranged, and possibly special students rates as well. If possible, reduced fares of any type should not be valid during peak periods, at least in the direction of peak load.

The general format of fare structure must be easily understood by the public using the service, and not contain contradictions or apparent discriminations which cannot be easily explained by personnel selling tickets. The use of off peak fares in particular must be clearly advertised, as this type of tariff will be used for the most part by occasional travellers.

VII CONCLUSIONS AND RECOMMENDATIONS

The suggested form of fares and tariffs shown in Table I accounts for various costs of the proposed Lakeshore Commuter Service, and attempts to charge such costs as equitably as possible among those using and benefiting from the service. The cost figures used throughout the report, except those assumed for use of existing facilities, are taken from estimates of cost in the January 1965 Commuter Rail Project report, and are included here as an example only of the order and form of fare suggested. A further detailed examination of expected costs and revenues will be required to produce a complete economic analysis of the service.

At the planned level of service and existing competitive conditions, it will not be possible to cover total costs through fare charges alone. It is therefore necessary to decide how a subsidy should be applied in order to control costs and keep such a subsidy to a minimum. This accounting decision must be made in the broader context of overall transportation costs for both rail commuter and alternative modes, and the planning and financial policies which justify support of rail commuter service.

It is recommended for analysis purposes that the subsidy be broken into two sections representing a fixed payment on each commuter fare, and a variable payment per commuter mile. This latter part of the subsidy can be influenced through the fare level set, and an optimum profit or passenger load position achieved, dependent on the policy requirements.

Using the patronage figures predicted in the January 1965 Report, revenues from the suggested fare formula will require a subsidy of $0.23 per peak period seat, plus a sum underwriting the variable costs, dependent on the seat occupancy ratio actually obtained. If fifty percent of the seat miles operated are occupied at the suggested per mile rate, variable operating costs would be covered by revenues.

Information obtained from the trial commuter service based on this approach to charges and costs, should allow the sponsoring authority to keep a close check on costs and revenues of the commuter service, and also to measure the effectiveness of the service on the basis of subsidized cost per passenger by distance and peak-period counts. The relationship of commuter rail service to overall economic and transportation policy should therefore be comparatively clear without additional analysis, and the effect of price and cost adjustments in the service should also be readily discernible, leading quickly to any further action required.

TABLE I

EXAMPLES OF FARE STRUCTURE TO AND FROM UNION STATION

Miles From Union Station	Station	Full Cost Fare $0.86 + .03/mile	Suggested Fare $0.40 + .01/mile	Comparable Fares and Costs			
				C.N.R. Existing	Auto** $0.50 +.04/mile	Gray Coach	Boston & Maine
32.0	Burlington	$1.82	$0.72	$0.95	$1.78	$0.72	$0.95
25.6	Bronte	1.63	.66	.80	1.52	.60	.82
21.4	Oakville	1.50	.61	.55	1.36	.53	.73
16.1	Clarkson	1.34	.56	.43	1.15	.48	.675
12.8	Port Credit	1.24	.53	.33	1.01	.44	.597
9.3	Long Branch	1.14	.49	.25	0.88	.31*	.540
6.8	Mimico	1.06	.47	.25	0.77	.31*	.485
0.0	Union Station						
5.2	Danforth	1.02	.45	.25	0.71	.17*	.46
8.8	Scarborough	1.12	.49	.40	0.85	.31*	.52
10.8	Eglinton	1.18	.51		0.93	.40	.56
12.8	Guildwood	1.24	.53		1.01	.44	.597
16.3	Rouge Hills (Port Union)	1.35	.56		1.15	.46	.675
20.9	Pickering (Dunbarton)	1.49	.61		1.34	.51	.73

* These are Toronto Transit Commission Zone Fares.

** One half $1.00 Parking Fee + $.04 per mile operating cost.

TABLE II

EXAMPLES OF FARE STRUCTURE TO AND FROM UNION STATION

Miles From Union Stat.	Station	Suggested Multi-rate Fare	10-Ride Ticket	20-Ride Ticket	40 Ride Ticket	Monthly Pass	Off Peak Fare	Off Peak Child	Peak Hour Single Fare
32.0	Burlington	$ .72	$ 7.50	$ 14.50	$ 29.00	$ 33.00	-	-	.85
25.6	Bronte	.66	6.75	13.25	26.50	30.50	-	-	.80
21.4	Oakville	.61	6.25	12.25	24.50	28.00	.60	.30	.75
16.1	Clarkson	.56	5.75	11.25	22.50	25.75	.55	.25	.70
12.8	Port Credit	.53	5.50	10.75	21.50	24.50	.50	.25	.65
9.3	Long Branch	.49	5.25	10.00	20.00	22.50	.45	.20	.60
6.8	Mimico	.47	5.00	9.50	19.00	21.75	.45	.20	.60
5.2	Danforth	.45	5.00	9.00	18.00	20.75	.40	.20	.60
8.8	Scarborough	.49	5.25	10.00	20.00	22.50	.45	.20	.60
10,8	Eglinton	.51	5.40	10.25	20.50	23.50	.50	.25	.65
12.8	Guildwood	.53	5.50	10.50	21.00	24.50	.50	.25	.65
16.3	Port Union	.56	5.75	11.25	22.50	26.00	.55	.25	.70
20.9	Dunbarton	.61	6.25	12.25	24.50	28.00	.60	.30	.75

METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

COMMUTER RAIL PROJECT
PROPOSED STATIONS & CATCHMENT AREAS

SCALE : 1" = 2 Miles

JANUARY 12, 1966.

DE LEUW, CATHER & COMPANY OF CANADA LTD

Ref: T-337

Mr. P.E. Wade,
Director,
Metropolitan Toronto and Region
Transportation Study,
P. O. Box 227,
Parliament Buildings,
TORONTO 2, Ontario.

Dear Mr. Wade:

We are pleased to submit our report on Introduction of Service and Service Programme for Trial. These are identified as Phase II (f) and II (j) in our Appraisal Report of November, 1965.

Our review of patronage estimates in Section I agrees substantially with those contained in our report of January 1965.

Section II deals with the Programme for Trial. Because there are certain constraints on opportunities for varying major service features and on the timing of telephone surveys, we find that the research programme will be more limited then first anticipated.

Yours very truly,

DE LEUW, CATHER & COMPANY OF CANADA LIMITED.

A.J. Freedman.

AJF:da

I INTRODUCTION OF SERVICE

a) Review of Patronage Estimates

In the Commuter Rail Project report of January, 1965, the estimates of potential patronage on the proposed commuter service were based on trip data collected during the market survey conducted in the spring of 1964. Further data is now available from the MTARTS-MTPB Home Interview Survey conducted the same spring.

In making the patronage estimates for the original report, the diversion curves used were those that had been developed for estimating the modal split between automobile and transit trips in Toronto. This method was further refined using experience gained in other centres in order to make the estimates of patronage relevant for a rail commuter operation. Inside the zone of transit service this meant a three-way modal split of trips among automobile, transit and commuter rail.

Traffic Research Corporation has prepared a report on Modal Split Analysis, dated December, 1965, in which trip data from Toronto and Philadelphia were used to produce new diversion curves. These curves show the percentage of trips by public transportation under given conditions, and a further split is made between transit and commuter rail trips based on comparative speed and cost of train and transit.

This information and the 1964 Home Interview Survey have been used to make a new estimate of peak-period patronage from the commuter corridors to Union Station. The following table compares the original estimate with a revised estimate both before and after extension of the Bloor subway.

PEAK PERIOD ONE-WAY TRIPS

ORIGINATING STATION	JANUARY 1965 REPORT	REVISED ESTIMATES Pre-Subway Extension	REVISED ESTIMATES Post-Subway Extension
Burlington	20	20	20
Bronte	40	34	34
Oakville	340	360	360
Clarkson	130	120	120
Port Credit	510	450	450
Long Branch	720	810	560
Mimico	680	540	180
TOTAL WEST	2440	2314	1724
Danforth	430	640	340
Scarborough	940	1160	1000
Eglinton	640	625	600
Guildwood	680	400	340
Port Union	170	215	215
Dunbarton	340	220	220
TOTAL EAST	3200	3260	2715

The January 1965 estimates were based on operation of the Bloor subway between Keele and Woodbine and therefore are directly comparable with the pre-subway extension estimates. It can be seen that while there are plus or minus differences in the case of individual stations, the totals in either commuter corridor are identical. As would be anticipated, the post-subway extension estimates indicate a drop in patronage at stations where the impact of the rapid transit system will be felt.

qq All these estimates have been derived from survey material gathered in the spring of 1964. Results of the continuing programme of on-train counts on the present service indicate that patronage is at its highest in the winter months. This is illustrated in the following table which shows the average patronage by month derived from morning rush-hour counts made weekly on the Oakville Subdivision (trains #996, #998, #150 and #56), and the ratio of each month to the average month.

ON-TRAIN COUNTS ON PRESENT SERVICE

MONTH	AVERAGE FOR MONTH	RATIO (TO 11-MONTH AVERAGE)
September 1965	1000	0.91
October	1050	0.96
November	1120	1.02
December	1080	0.98
January 1966	1200	1.09
February	1240	1.13
March	1170	1.07
April	1070	0.98
May	1080	0.98
June	1040	0.95
July 1966	1000	0.91

Thus, on the basis of this monthly pattern, estimates made using data obtained in spring would be about 14 percent higher in February, the peak month of patronage on the present service.

b) Equipment Capacity

The usual caution must be exercised in assessing the patronage estimates presented in the above table. In addition to the problems always present when forecasting trips on a new and comparatively unknown form of transportation service, there also has been considerable population growth in both corridors since the source material was gathered--in fact, a period of three years will have elapsed by the time the commuter rail service is inaugurated. Thus, the forecast patronage may well be underestimated.

A further estimate of patronage will be derived from the Benchmark, or Pre-Trial, survey to be conducted a short time before commencement of operation. This will constitute the best and most up-to-date guide to patronage on introduction of service, and may well indicate the need for last-minute revisions to service features. In the meantime, however,

the estimates on hand indicate that the capacity of the equipment being purchased is adequate. Based on the Arrive and Leave times recommended in our report of April, 1966, and the fleet of 49 100-seat cars on order, about 5500 peak-period seats can be provided in one direction of travel.

II SERVICE PROGRAMME FOR TRIAL

a) Discussion

In developing a service programme geared to the objectives of the market and service analysis, it is necessary that consideration also be given to the particular needs of both patrons' desires and management's requirements. For example, while it might be theoretically desirable to vary service features and analyse resulting market conditions many times during the course of the trial, such an approach could well discourage patrons; it is most unlikely that any individual, particularly the one who can exercise a choice in travel mode, will accept a situation where fares, schedules and other features are constantly changing. On the management side, too, each modification of fares will necessitate revisions in ticketing and accounting procedures and, most importantly, radical changes in schedules can only be effected twice a year when general railway timetables are changed. Thus, some compromise is necessary between meeting the research objectives and satisfying other requirements.

Consideration of both the features of the commuter rail operation and its supporting facilities demonstrates that there are many possibilities for introducing service changes such as in rail fares, schedules and equipment capacity; feeder-bus routes, fares and frequency; size of parking lots and fee structure; interconnecting transit services and arrangements for kiss-and-ride patrons. Obviously changes will be made in these and other features during the course of the trial, but it would be neither profitable for research nor practicable financially to suggest that each and every variation be followed by an in-depth survey to determine market response. The problem then is to distinguish between those service features which, when changed, will have local or limited affect, and those which will have a wide impact on the total travel market in the commuter corridors.

The following table classifies the impact of changes in certain service features - note that this is confined to items that may be relatively easily changed and does not include more permanent features such as station location, station design and equipment design.

IMPACT OF CHANGES IN CERTAIN SERVICE FEATURES

	Service Features	Impact	Remarks
Section I	COMMUTER RAIL		
	Fare Structure	Total Market	
	Arrival and Departure Times	Total Market	Union Station
	Headways	Total Market	Presently fixed at 20 minutes at peak period; variable in off-peak.
	Train Running Times	Total Market	

(cont'd..)

IMPACT OF CHANGES IN CERTAIN SERVICE FEATURES (cont'd)

	Service Features	Impact	Remarks
Section II	PARKING POLICY		
	Fees	Probably Sizeable Portion of Total Market	Parking lots being located at all but Union Station
Section III	PARKING FACILITIES		
	Capacity	Limited to Individual Stations	The majority of stations will have varying amounts of reserve capacity for provision later on if needed
Section IV	BUS-FEEDER POLICY		
	Fare Structure	Limited to a few Stations	Probably few stations will be so served
Section V	BUS-FEEDER FACILITIES		
	Routes, Stops, Frequency, Capacity	Limited to a few Stations	
Section VI	INTER-CONNECTING TRANSIT FACILITIES		
	Routes, Frequency, Capacity	Limited to a few Stations	Aside from Union Station where transit facilities are fixed, some changes may be made at a few other stations

Changes in service features associated with the rail operation itself will have an effect on the total travel market, i.e. any alteration in the items in Section I will influence public response; some users may give up the service and some non-users may be attracted to it - all this outside the context of how they may arrive or depart from a station.

Section II - policy with respect to parking fees - will not affect patrons who have no need to store an automobile. It is considered, however, that many would-be rail commuters will wish to leave a vehicle at the home station. In this situation the fee paid will affect them to the extent that

they, a) accept it, b) reject it and arrive by other means, or c) give up using the commuter service. As parking is to be provided at every station it seems likely then that the policy on fees probably will affect a sizeably portion of the potential travel market.

Sections III to IV contain features much more localized in terms of impact of changes. Any increase in parking lot capacity will be undertaken on a station-by-station basis and hardly likely will affect parkers at other stations; bus-feeder policies, systems and inter-connecting transit facilities will be felt by a restricted number of existing and potential patrons because only a few stations will have such facilities incorporated into them.

The conclusion then is that the market and service analysis - and therefore the service programme for trial - must be direct primarily to research of the effects of those service changes contained in Sections I and II of the preceding table.

One last point remains to be made in this general discussion. While the objective of the report is to set out a service programme for the trial it should be recognized at the outset that it may have to be altered under actual market analysis experience. The timing given here for introduction of, or a change in, a particular service feature may well need modification if subsequent evidence shows that it is considerably more or considerably less important to patronage than now thought. That is, the format of the programme will be as much dictated by market response as by a priori reasoning.

b) The Programme

The programme for trial is illustrated on the attached exhibit and is based on a period of three years commencing with initiation of the commuter rail service assumed to be May 1st, 1967. The following three factors should be noted:

(i) It is recommended that no telephone surveys be conducted in any year between July 1st and August 31st, and between November 15th and January 15th. Surveys in either period would not produce representative results; in the former case many of the hard-core commuters will be on vacation, and in the latter case travel habits will be altered radically with the influence of Christmas shopping, and other activities, post-Christmas sales and winter vacations.

(ii) Radical changes in operating schedules may be changed only when new railway timetables come into effect on April 1st and October 1st.

(iii) Opportunity must be given for patronage to settle down and stabilize after commencement of service and after any change is made to a major service feature; basically fares and schedules, as defined above in Section II a). A period of five months has been allowed after the start of operation (this may be too short), and three months following a service change.

These three factors are therefore considered to be "Programme Restraints" in that they prohibit field work for telephone surveys during certain periods and permit large-scale schedule changes only twice a year. A further constraint is involved in the question of altering rail fares; it would not appear to be wise to change fares in the periods defined in (i) and (iii) above.

The suggested programme would therefore be as follows:-

1. No surveys and no major service changes between May 1st and September 30th.

2. The first telephone survey to commence October 1st with complete results expected to be available January 1st, 1968. Note that the field work must be completed before November 15th, 1967.

   The primary purposes of this survey are to compare pretrial interviews with subsequent behaviour, and to identify the nature and extent of changes required to increase market potential.

3. Schedules are altered April 1st, 1968. The lead-time of three months commencing on January 1st is considered to be sufficient to make the necessary arrangements.

4. In the five-month period between April 1st and September 1st, 1968 neither can telephone surveys be carried out nor service variations be introduced ("Settling" period plus summer vacations).

5. From September 30th to November 15th, 1968 there is opportunity for either a telephone survey or a service change, but not both.

   The exhibit indicates a change in fares October 1st.

6. The scheduling of telephone surveys and service changes thereafter until the end of three-year period is governed by the same conditions as described in Items 1 through 5.

The net result is that only three major changes in service can be made and three telephone surveys conducted in the three-year period. Some re-arrangements, of course, can be effected. For example, the change in fares programmed for October 1st, 1968, can be replaced by the second survey; this, however, has no effect on the total number of possible service changes and telephone surveys.

As shown on the exhibit the three changes in major service features are programmed thus:-

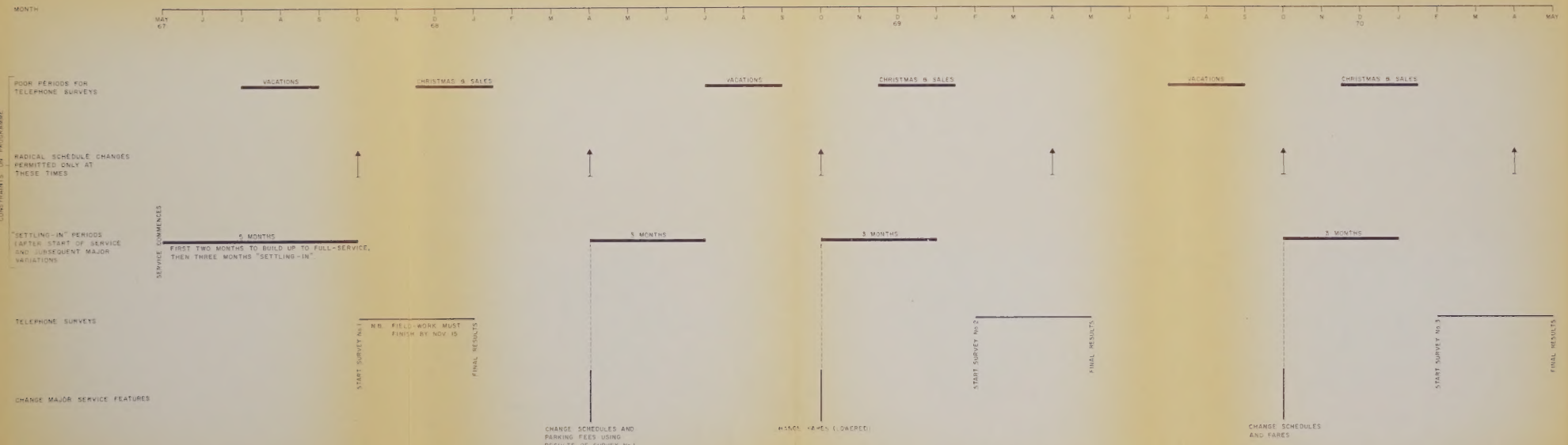
1. April 1st, 1968: Change Schedules and Parking Fees
2. October 1st, 1968: Lower Fares
3. October 1st, 1969: Change Schedules and Fares

Policy decisions, management requirements and operating experience will probably dictate a completely different order and grouping of events, but the reasoning employed herein is as follows:

It would be most desirable that in the first twelve months a record be obtained of seasonal patronage fluctuations under one fare structure, i.e. no change should be made before May 1st, 1968. As a variation in schedules is possible in April 1968 this opportunity should be taken. A change in parking fees, if required, has been associated with the re-scheduling in order to avoid two fiscal modifications taking place at the same time early in the operation of the service.

Whether fares should be raised rather than lowered is difficult to foresee at this time because government policy is directly involved. It is tentatively suggested, however, that a fare reduction may be the step to be taken on the basis that the results of Survey #1 will indicate greater patronage possibilities with lower fares.

Combining a schedule and fare variation in October 1969 is felt to be reasonable because the service will by that time have established itself as a permanent feature of the transportation system in the Lakeshore corridors



DRAFT

M.T.A.R.T.S.
MARKET & SERVICE ANALYSIS

PROGRAMME FOR TRIAL

AUGUST 1966 T-357

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